DOCUMENT RESUME

ED 356 313 CE 062 563

AUTHOR	Bragg, Debra D.; And Others
TITLE	Implementing Tech Prep: A Guide to Planning a Quality Initiative.
INSTITUTION	National Center for Research in Vocational Education, Berkeley, CA.
SPONS AGENCY	Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE	Dec 92
CONTRACT	V051A80004-92A
NOTE	221p.
AVAILABLE FROM	NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455 (order no. MDS-241: $10.50).
PUB TYPE	Guides - Non-Classroom Use (055)
EDRS PRICE	MF01/PC09 Plus Postage.
DESCRIPTORS	Articulation (Education); Cooperative Programs; Coordination; *Educational Change; Educational Cooperation; Educational Planning; *Educational Quality; Group Dynamics; Postsecondary Education; Program Development; *Program Implementation; *Quality Control; Secondary Education; Strategic Planning; Teamwork; Technology; Vocational Education
IDENTIFIERS	*Tech Prep; *Total Quality Management

ABSTRACT

This guide provides perspectives about Technical Preparation (tech prep) from personnel representing the 50 state agencies and many local consortia. The guide also explores an approach to implementing tech prep based on the concept of total quality management (TQM). Each chapter begins with an overview that provides background, a summary, and list of topics. The material is presented in modular units. The first chapter, "Introduction to the Guide" (Debra D. Bragg) explains the purpose of the guide. "An Historical Perspective for Tech Prep" (Carolyn J. Dornsife, Debra D. Bragg) considers early influences on the tech prep movement. "Tech Prep and Educational Reform" (Carolyn J. Dornsife) describes tech prep in light of other educational restructuring initiatives in U.S. schools. "Initiation of Tech Prep by the Fifty States" (James D. Layton, Debra D. Bragg) reports findings from the National Center on Research in Vocational Education (NCRVE) research on state tech prep programs. "Planning and Implementation of Tech Prep by Local Consortia" (Debra D. Bragg) presents findings from NCRVE field research involving four states and eight local consortia. "Total Quality Management (TQM)" (Catherine L. Kirby, Debra D. Bragg) explores total quality management and considers its implications for tech prep. "Implementing Tech Prep with Teams" (Catherine L. Kirby, James D. Layton) describes the importance of teamwork and how teams can be used to implement tech prep. "How to Use Group Process and Quality Tools for Tech Prep" (James D. Layton) discusses how quality tools can be incorporated into tech prep planning and implementation. "How to Implement Tech Prep" (Debra D. Bragg) describes how to apply Juran's prerequisites for strategic quality management to tech prep implementation. Appendixes include 50-state survey summary results and action steps for successful articulation. (YLB)

ED356318

NCRVE

National Center for Research in
Vocational Education

University of California, Berkeley

IMPLEMENTING TECH PREP:
A GUIDE TO PLANNING
A QUALITY INITIATIVE

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it

☐ Minor changes have been made to improve reproduction quality

● Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

CE 062 563

Supported by
the Office of Vocational and Adult Education,
U.S. Department of Education

BEST COPY AVAILABLE

This publication is available from the:

National Center for Research in Vocational Education
Materials Distribution Service
Western Illinois University
46 Horrabin Hall
Macomb, IL 61455

800-637-7652 (Toll Free)

BEST COPY AVAILABLE

IMPLEMENTING TECH PREP:
A GUIDE TO PLANNING
A QUALITY INITIATIVE

Debra D. Bragg
University of Illinois at Urbana-Champaign

National Center for Research in Vocational Education
University of California at Berkeley
1995 University Avenue, Suite 375
Berkeley, CA 94704

Supported by
The Office of Vocational and Adult Education,
U.S. Department of Education

December, 1992

MDS-241

CE 062 563

FUNDING INFORMATION

Project Title:	National Center for Research in Vocational Education
Grant Number:	V051A80004-92A
Act under which Funds Administered:	Carl D. Perkins Vocational Education Act P. L. 98-524
Source of Grant:	Office of Vocational and Adult Education U.S. Department of Education Washington, DC 20202
Grantee:	The Regents of the University of California National Center for Research in Vocational Education 1995 University Avenue, Suite 375 Berkeley, CA 94704
Director:	Charles S. Benson
Percent of Total Grant Financed by Federal Money:	100%
Dollar Amount of Federal Funds for Grant:	$5,775,376
Disclaimer:	This publication was prepared pursuant to a grant with the Office of Vocational and Adult Education, U.S. Department of Education. Grantees undertaking such projects under government sponsorship are encouraged to express freely their judgement in professional and technical matters. Points of view of opinions do not, therefore, necessarily represent official U.S. Department of Education position or policy.
Discrimination:	Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Title IX of the Education Amendments of 1972 states: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance." Therefore, the National Center for Research in Vocational Education project, like every program or activity receiving financial assistance from the U.S. Department of Education, must be operated in compliance with these laws.

Implementing Tech Prep:
A Guide to Planning a Quality Initiative

Table of Contents

DETAILED TABLE OF CONTENTS iii

ACKNOWLEDGEMENTS vii

CHAPTER 1 Introduction to the Guide 1-1
Debra D. Bragg

CHAPTER 2 An Historical Perspective for Tech Prep 2-1
Carolyn J. Dornsife & Debra D. Bragg

CHAPTER 3 Tech Prep and Educational Reform 3-1
Carolyn J. Dornsife

CHAPTER 4 Initiation of Tech Prep by the Fifty States 4-1
James D. Layton and Debra D. Bragg

CHAPTER 5 Planning and Implementation of Tech Prep by Local Consortia 5-1
Debra D. Bragg

CHAPTER 6 Total Quality Management: A New Approach for Tech Prep 6-1
Catherine L. Kirby & Debra D. Bragg

CHAPTER 7 Implementing Tech Prep with Teams 7-1
Catherine L. Kirby & James D. Layton

CHAPTER 8 How to Use Group Process and Quality Tools for Tech Prep 8-1
James D. Layton

CHAPTER 9 How to Implement Tech Prep: Applying Juran's Prerequisites for Strategic Quality Management 9-1
Debra D. Bragg

APPENDICES
A Fifty-State Survey Summary Results A-1
B Acknowledgement of Sites for NCRVE Research B-1
C Action Steps for Successful Articulation C-1

Implementing Tech Prep:
A Guide to Planning a Quality Initiative

Detailed Table of Contents

ACKNOWLEDGEMENTS vii

CHAPTER 1 Introduction to the Guide 1-1
Debra D. Bragg

CHAPTER 2 An Historical Perspective for Tech Prep 2-1
Carolyn J. Dornsife & Debra D. Bragg

- Overview 2-1
- The Genesis of Tech Prep 2-2
- Early Reform Strategies 2-5
- Early Implementation of Tech Prep 2-8
- Variation in Articulated Curriculum 2-10
- Lessons Learned from Successful Articulation Efforts 2-12
- The Tech Prep Education Act 2-13
- The Intended Impact of Tech Prep 2-15
- References 2-16

CHAPTER 3 Tech Prep and Educational Reform 3-1
Carolyn J. Dornsife

- Overview 3-1
- Accepting the Reality of Reform 3-2
- An Overview of Four Aspects of Restructuring 3-4
- Curriculum, Instruction, and Tech Prep 3-7
- Authority, Decision Making, and Tech Prep 3-11
- New Staff Roles and Tech Prep 3-12
- Accountability Systems and Tech Prep 3-13
- Challenges to Tech Prep Implementation 3-14
- Federal Support for Tech Prep 3-15
- References 3-17

Continued on next page

Detailed Table of Contents, continued

CHAPTER 4 Initiation of Tech Prep by the Fifty States 4-1
James D. Layton and Debra D. Bragg

- Overview 4-1
- Fifty-State Tech Prep Survey 4-2
- Summary of Findings on Grants 4-3
- Tech Prep Philosophies and Policies 4-5
- Components of State and Local Tech Prep Initiatives 4-7
- Conclusions and Recommendations 4-16
- References 4-18

CHAPTER 5 Planning and Implementation of Tech Prep by Local Consortia 5-1
Debra D. Bragg

- Overview 5-1
- Field Research 5-2
- Local Planning and Implementation Processes 5-6
- Definition and Strategy Setting 5-7
- Consensus Building 5-8
- Selection and Orientation of Planners 5-9
- Consortium-level Planning 5-11
- Wide-Scale Orientation and Recruitment 5-13
- Initial Implementation 5-14
- Implementation Issues 5-15
- References 5-20

Continued on next page

8

Detailed Table of Contents, continued

CHAPTER 6 Total Quality Management: A New Approach for Tech Prep 6-1
Catherine L. Kirby & Debra D. Bragg

- Overview 6-1
- Quality: Advice from Business to Educators 6-2
- Quality Management Theorists 6-4
- A Natural Match—TQM and Tech Prep Planning 6-10
- Leadership from Executive Staff 6-13
- A Quality Vision and Policies 6-17
- Broad Quality Goals 6-20
- Deployment of Quality Goals to all Levels of the Organization 6-22
- Provision of Resources, Including Training 6-25
- Measurement 6-28
- Performance Review 6-30
- Reward Systems for Quality Improvement 6-31
- Challenges in Applying TQM to Tech Prep 6-33
- References 6-35

CHAPTER 7 Implementing Tech Prep with Teams 7-1
Catherine L. Kirby & James D. Layton

- Overview 7-1
- Teamwork and Tech Prep 7-2
- Effective Leadership of Teams 7-4
- Principles of Teamwork 7-6
- How to Build Tech Prep Teams 7-8
- Team Problem Solving 7-9
- Summary 7-10
- References 7-12

Continued on next page

Detailed Table of Contents, continued

CHAPTER 8 How to Use Group Process and Quality Tools for Tech Prep 8-1
James D. Layton

- Overview 8-1
- Brainstorming 8-2
- Multivoting 8-5
- Nominal Group Technique 8-8
- Consensus 8-12
- Cause and Effect 8-14
- Barriers and Aids 8-18
- Action Planning 8-21
- Needs Analysis 8-23
- Survey 8-25
- Focus Groups 8-28
- Benchmarking 8-31
- Other TQM Tools 8-33
- Computer-Assisted Group Techniques 8-34
- References 8-35

CHAPTER 9 How to Implement Tech Prep: Applying Juran's Prerequisites for Strategic Quality Management 9-1
Debra D. Bragg

- Overview 9-1
- Gain Support from Leaders for Tech Prep 9-2
- Create a Shared Quality Vision and Policies to Support Tech Prep 9-3
- Formulate and Prioritize Quality Goals for Tech Prep 9-4
- Deploy the Goals of Tech Prep Throughout the Consortium 9-5
- Provide the Needed Resources, Including Training 9-6
- State Desired Outcomes and Establish Measures 9-7
- Review Performance Regularly 9-8
- Revise the Reward System 9-9
- Summary of Eight Implementation Strategies 9-10
- References 9-12

APPENDICES
A Fifty-State Survey Summary Results A-1
B Acknowledgement of Sites for NCRVE Research B-1
C Action Steps for Successful Articulation C-1

Acknowledgements

First, the authors wish to acknowledge the contributions of the fifty states and many local consortia whose contributions were essential to preparation of this document (see Appendices A and B). These individuals contributed time and information enthusiastically to help ensure a successful beginning for Tech Prep for the many new local consortia forming across the country. In addition, we are grateful to businesses and industries that generously contributed ideas and materials concerning Total Quality Management (TQM), especially AT&T, IBM, Motorola, NCR, Procter & Gamble, and Xerox.

Special recognition also goes to project staff that assisted in gathering information for this NCRVE project. James D. Layton, Glenda K. Huffman, Catherine L. Kirby, and Kimberly A. Skielnik were especially instrumental in accomplishing various research efforts throughout the project. Appreciation is also shared with Mildred Griggs, site director for NCRVE at the University of Illinois and Gerald Hayward, deputy director for NCRVE at the University of California at Berkeley, for their support of this research and development project.

Assistance provided by Betty C. Potts of the AT&T National Product Training Center in critiquing the manuscript and providing recommendations on Information Mapping® was deeply appreciated. In addition, we are indebted to a panel of anonymous reviewers selected by NCRVE for making numerous improvements in the final product. Finally, our thanks goes to Krista Gallagher and John R. Walters for working their word-processing magic on the final manuscript.

Chapter 1

Introduction to the Guide

Debra D. Bragg

Overview

Background

Across the country, consortia of local educational agencies; postsecondary educational institutions; and often business, industry, and labor are forming to begin planning and implementing Technical Preparation (Tech Prep). The Tech Prep Education Act, Title III of the Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990 (commonly known as Perkins II), has provided fiscal resources needed to begin these initiatives.

Perkins II has as its goal the establishment of Tech Prep initiatives that can confront a multitude of educational and economic concerns. These are

- Schooling lacks meaning for a large proportion of high school students, often referred to as the neglected majority.
- America's educational system fails to efficiently transition many young people from high school to work or to further education.
- Technically-demanding occupations are growing at a faster rate than America's technically-skilled workforce.
- The United States is competing in a global marketplace where foreign competitors' workers are more highly trained and productive than its own.

Tech Prep is seen as a potential solution to these problems because of its comprehensive, applied, and technologically-rich approach to blending secondary and postsecondary education for employment.

Purpose of the guide

The guide provides perspectives about Tech Prep from personnel representing the fifty state agencies and many local consortia, some of whom have been involved since before passage of Perkins II. Many ideas in this guidebook are drawn from practices perceived by practitioners to work successfully when implementing Tech Prep in recent years. The guide also explores an approach to implementing Tech Prep based on the concept of total quality management (TQM).

Continued on next page

Purpose of the guide (continued)

We think it is important to borrow good ideas from many arenas to ensure the success of Tech Prep. Consequently, the guide explores the ways business and industry as well as education is implementing TQM.

The guidebook is not a cookbook advocating only one approach. Rather, it considers new ways of thinking about the educational innovation promised by Tech Prep. We present a potential approach for Tech Prep implementation that is based on eight essential prerequisites for TQM.

We do not see this as the only approach, but we think it is a place to begin to consider ways the two reform approaches can compliment one another. Final decisions about how to implement Tech Prep remain with state agencies and local consortia.

Tech Prep and TQM

The guide first discusses Tech Prep in relation to traditional approaches to educational reform and then considers similarities between Tech Prep and TQM. Briefly, in this guidebook, we explore the following:

- Tech Prep and educational reform
- planning and implementation strategies for Tech Prep based on "best practices" undertaken by state agencies and local consortia
- principles and procedures associated with both Tech Prep and TQM
- planning and implementation strategies for Tech Prep based on ideas about TQM

Intended users

This guidebook has three audiences. The primary audience is state and local leaders (e.g., education, community, business, labor) who are involved in the entire process of planning and implementing Tech Prep. A secondary audience includes policy makers, teacher educators, researchers, and others who may be indirectly involved with Tech Prep implementation. A third audience includes representatives of the many stakeholder groups involved in the planning and implementation process, including students, parents, and employers. It is our goal to bring a new level of understanding about Tech Prep to each of these audiences.

For all three audiences, we recognize that additional detail is needed to make this guide useful for day-to-day planning. However, we believe this activity must be accomplished at the local level in order to address the specific goals of a local consortia.

Continued on next page

Organization of the Guide

This table shows how the Guide is organized and describes briefly the contents of each chapter.

Chapter	Title	Overview
1	Introduction to the Guide	Introduces the contents of the guide
2	An Historical Perspective for Tech Prep	Considers early influences on the Tech Prep movement
3	Tech Prep and Educational Reform	Describes Tech Prep in light of other educational restructuring initiatives in America's schools
4	Initiation of Tech Prep by the Fifty States	Reports findings from NCRVE research on Tech Prep involving the fifty states
5	Planning and Implementation of Tech Prep by Local Consortia	Presents findings from NCRVE field research involving four states and eight local consortia
6	Total Quality Management: A New Approach	Explores TQM and considers its implications for Tech Prep
7	Implementing Tech Prep with Teams	Describes the importance of teamwork and how teams can be used to implement Tech Prep
8	How to use Group Processes and Quality Tools for Tech Prep	Discusses how quality tools can be incorporated into Tech Prep planning and implementation
9	How to Implement Tech Prep	Describes how to apply Juran's prerequisites for strategic quality management to Tech Prep implementation

Continued on next page

Overview, continued

How to use the guide

This guide has been prepared using the Information Mapping® style of writing. This approach is designed to present information in a concise, easy to read fashion. It supports a reader's ability to scan a document and quickly find information that is needed, especially with the assistance of the *Detailed Table of Contents* at the front. The use of modular units and blocks of text enable a reader to choose information that is needed without having to sort through pages of text. Research conducted on Information Mapping® has shown that it cuts down on reading time by as much as forty percent. And, because it is easy to find information and move through the document in ways that make sense to individual readers, it is also easier to learn and relearn information.

We encourage you to examine the *Detailed Table of Contents* carefully to gain an understanding of the information presented in the entire guide. Then, you may wish to read about a particular topic of interest or scan the entire document to get an overall sense of information presented here. For those who are interested in history and background information surrounding Tech Prep, we alert you to Chapters 2 and 3. For individuals interested in current research findings concerning Tech Prep at the state and local levels, we recommend Chapters 4 and 5. Finally, for persons seeking information about how to implement Tech Prep using a TQM approach, we encourage you to read Chapters 5 through 9.

Our goal has been to prepare a document that presents a vast amount of information about planning and implementation of Tech Prep. At the same time, we wanted to ensure that the guide would be easy to use. We encourage you to give us feedback about whether these goals have been accomplished.

Chapter 2

An Historical Perspective for Tech Prep

Carolyn J. Dornsife and Debra D. Bragg

Overview

Background

The Tech Prep Education Act of 1990 was formulated to provide a means of preparing youth for America's ever changing, globally-competitive workforce. Tech Prep can be the technologically-rich and academically-challenging curriculum required to rebuild America's workforce (Carl D. Perkins Vocational and Applied Technology Education Act Amendment of 1990). Today's concept of Tech Prep is envisioned to blend articulation, applied academics, career education, and work-based learning in ways that can offer America's students the opportunity for success in postsecondary education and careers.

In this chapter

This chapter explores how Tech Prep came about and how it is formulated in current legislation. It is not our intention to provide an exhaustive historical review of Tech Prep but, rather, to provide a general understanding of where Tech Prep falls in the historical continuum of educational programs. In short, Tech Prep has developed over time from proposals to reform secondary and postsecondary education made by federal policy makers, educators, vocational education association representatives, and business leaders. The major significance of the Perkins Act, as we see it, is federal support for a renewed effort to create Tech Prep curricula based on current effective articulation and integration practices.

This chapter covers the following topics:

Topic	See Page
The Genesis of Tech Prep	2-2
Early Reform Strategies	2-5
Early Implementation of Tech Prep	2-8
Variation in Articulated Curriculum	2-10
Lessons for Tech Prep from Successful Articulation Efforts	2-12
The Tech Prep Education Act	2-13
The Intended Impact of Tech Prep	2-15
References	2-16

The Genesis of Tech Prep

Two reoccurring debates and related issues

The genesis of Tech Prep is associated with a long history of educators and policy makers confronting two reoccurring debates and related issues. The debates pertain to answering the following questions:

1. What is the appropriate role and function of job training and vocational education as part of the nation's public education system?
2. What are the educational consequences of technological change in the workplace?

A central concern of these debates is determining whether the proliferation of high technology industries increases or decreases the skill requirements of jobs and/or employees.

One view is that technology does indeed increase skill demands and that schools should respond by increasing the availability of highly specialized technical job skill training. An alternative view is that the deskilling effects of technology require greater attention to be paid to the development of broadly applicable basic and higher-order skills. Some may view Tech Prep as an approach that bridges these alternative views by ensuring technical along with academic, foundational competencies. Of course, how Tech Prep will actually be conceptualized is only beginning to be understood.

Early development of Tech Prep programs 1968-1978

It is in the context of seeking answers to these ongoing educational and employment debates that the concept of Tech Prep is framed. The first major attempt to establish Tech Prep was the result of abundant federal manpower legislation, (e.g., The Manpower Development and Training Act of 1962 and the Vocational Education Act of 1963).

In 1968 the Oregon State Board of Education and State Department of Employment formed two task forces to produce a plan for promoting and directing the development of occupational education in the state's high schools and community colleges. The impetus for the plan was the federal legislation that assigned an increasingly prominent role for vocational education in the achievement of national labor policies. "The legislation also placed an urgent priority on the expansion and refinement of occupational information" (Oregon State Board of Education, 1968, p. 4).

Continued on next page

Oregon task force recommendations

Recommendations of one of the task forces included the following:

1. identify the elements of effective articulation between high schools and community colleges,
2. support a "cluster approach" to occupational program planning (classifying occupations into groups with identical skills and knowledge),
3. promote the exploration of occupations in grades 7 through 10 and the implementation of occupational programs in grades 11 and 12, and
4. require the overall program to include guidance and counseling services throughout all grades (Oregon State Board of Education, 1968, p. 13).

The result of these priorities was a substantial state effort directed at finding viable techniques to determine present and future employment opportunities and training requirements. Clearly, the seeds for current Tech Prep programs were planted by the efforts of this Oregon task force.

The Education Amendments of 1972

A second attempt to establish Tech Prep came in response to the Education Amendments of 1972. This law established the 1202 Commission that required states seeking federal assistance to establish a commission responsible for comprehensive statewide planning of postsecondary education encompassing community college and occupational education.

In response to the Amendments of 1972, the National Institute of Education (NIE) advocated a unified effort to provide a true educational continuum between vocational, technical, and academic education (Bender, 1973). Specifically, NIE supported the career education concept through the articulation of secondary and postsecondary occupational education programs (i.e., articulation on a nationwide basis). However, results from this NIE study also indicated that the relationships of state organizational structures had a significant impact on achieving success.

Continued on next page

The Education Amendments of 1972 (continued)

In short, where vocational education and postsecondary institutions were under the same state organizational structure, the likelihood was greater for articulation to be fostered. Although a seemingly simple conclusion, the effect was to establish the fact that, by law from the federal level, there was agreement on the necessity for consensus in establishing educational programs and priorities. Yet, it would be nearly two decades later before federal legislation on Tech Prep would provide a mechanism for building consensus across educational systems through local Tech Prep consortium.

Early Reform Strategies

A Nation at Risk

During the 1980s, the concept of Tech Prep was developed more fully. This was a decade filled with rhetoric, heated political debate, and a plethora of legislation attempting to improve the quality of America's schools and colleges. Beginning with *A Nation at Risk* (Commission on Excellence in Education, 1983), the country was alerted to problems of low achievement and high drop-out in America's schools. This report kicked off a tidal wave of educational reform and challenged teachers to do more with less. It heightened the country's awareness of problems in schools without providing meaningful solutions to them, according to Hanson (1991).

1980 reform strategies

Reform strategies prevalent in the early 1980s involved

- shifting curricula back to the basics.
- implementing statewide testing programs.
- ensuring time on task.
- mandating more rigorous academic course work.
- increasing graduation requirements for students and their teachers.
- offering merit pay.
- creating career ladders and differentiated staffing.

Conspicuously absent from these strategies was any response linked to vocational education. Therefore, to counter reforms focused primarily on academic education, the vocational education community produced *The Unfinished Agenda* (National Commission on Secondary Vocational Education, 1984).

The Unfinished Agenda

The strongest statement of nationwide support for articulated curriculum and preparing youth for employment was prepared by the National Commission on Secondary Vocational Education (1984): *The Unfinished Agenda*. Funded by U.S. Office of Vocational and Adult Education (OVAE), the commission responded to the wake of national reports documenting the deficient academic preparation of students, and the need for school reform. In part, the commission concluded that improved secondary vocational education was based on "building stronger bridges between vocational and academic education to maximize learning and career opportunities" (1984, p. vi).

Continued on next page

Early Reform Strategies, continued

The Unfinished Agenda (continued)

Commission members argued that more academic course work would not improve the student/employee preparation because "80 percent of the jobs in America do not require a college degree, and most students will not obtain one" (1984, p. 1).

Call for curriculum changes

In recognition of these employment figures and the need for school reform, the commission proposed curriculum changes in secondary schools that centered on providing theory and application of academic courses, and an explicit meaning for vocational courses. "Integrated vocational education provides career guidance, development of general employability skills, and specific occupational skill training" (1984, p. 14).

Furthermore, in order to continue their training in postsecondary institutions, students should be thoroughly aware of career development before entering high school. "This smooth transition is fostered through articulation efforts such as coordinated Tech prep [sic] curriculum developed in many communities" (National Commission on Secondary Vocational Education, 1984, p. 18).

The Neglected Majority

Also at that time, *The Neglected Majority,* by Parnell (1985), offered a potential option for bringing technical education into the mix of educational reform. In his book, Parnell argued that a narrow view of excellence had driven America's educational system into a corner. Educators needed to redefine excellence to include development of the potential of a diverse student population with individual differences taken into account, rather than focusing solely on those who planned to attend college. Toward this end, he proposed the 2+2 Tech Prep/ Associate Degree (TPAD) program.

Continued on next page

The goals of TPAD

Parnell saw TPAD as a complete restructuring of general education curricula. In essence, it was a way to reach the middle two quartiles of America's secondary school population—the neglected majority—those in neither college prep nor vocational education. He believed it should "blend the liberal arts with the practical arts without diluting the time-honored baccalaureate degree/college prep track" (1985, p. 140).

According to Parnell, the content of the program should be a foundation of basic proficiency development in math, science, communications, and technology in an applied setting. He further recommended substantive program coordination between secondary and postsecondary schools. With this framework as a guide, Tech Prep-type initiatives began developing across the country in the late 1980s.

Early Implementation of Tech Prep

Efforts to begin Tech Prep

The initial design of TPAD programs proposed by Parnell (1985) reflected a planned link between two or more educational systems. In agreement with Parnell and other leaders in education and public policy, business leaders also supported reforms in vocational education. For instance, business and government leaders in twelve southern states formed the Southern Growth Policies Board to address the issues associated with integrating new scientific discoveries and technological innovation with traditional thinking about economic development.

SREB's recommendations

In response to these initiatives, the Southern Regional Education Board (SREB) recommended that state vocational education departments establish standards for integrating math and science competencies into their programs, monitoring outcomes, and reporting progress (Southern Growth Policies Board, 1989). In addition, the Southern Technology Council recommended that high school and community college administrators work together to ensure a smooth transition between educational institutions because the responsibility for teaching higher-order technical occupational skills had shifted to two-year colleges. To meet this recommendation, the council supported the assessment of existing programs that provided this transition, such as the Tech Prep programs in Richmond County, North Carolina.

CORD's role

Another organization that played an important role in the early implementation of Tech Prep was the Center for Occupational Research and Development (CORD). This center was actively engaged in developing personnel, organizing consortia, and designing applied academic curricula during the mid to later 1980s (Hull & Parnell, 1991). The impact CORD has had and continues to have on implementation of Tech Prep is readily visible in local consortia forming throughout the nation.

Probably best known is CORD's technical education plan that begins with career awareness at kindergarten, progresses through technical preparation involving applied academics and work-based learning at the high school level, and culminates with advanced technology education at the associate degree level or beyond. Without a doubt, this vision of Tech Prep is having a significant impact on implementation of the current legislation.

Continued on next page

Most states report some Tech Prep

As a result of efforts by these organizations, federal policy makers, educators, and business leaders, many curriculum changes had occurred in secondary and postsecondary institutions by the late 1980s. In particular, over thirty-four state representatives reported the establishment of Tech Prep programs between various secondary and postsecondary institutions (Tri-County Technical College, 1990). Some states, (e.g., Oregon, Delaware, Indiana) also mandated the use of competency-based vocational education curriculum, and the development of articulated programs between secondary and postsecondary institutions. These and other states (e.g., Michigan, North Carolina, California, Washington, and Florida) actively promoted articulation, partnerships with business and industry, and performance-based course work.

States address problems

Throughout the country, states were beginning to address problems created by disjointed educational programs and facilitating formal articulation agreements between secondary and postsecondary vocational-technical education programs. Some of these efforts were fruitful; some were not. However, most shared the difficulty with establishing consistent definitions for articulated programs including Tech Prep, finding adequate funding, and enlisting full-time leadership.

Variation in Articulated Curriculum

Articulation has guided Tech Prep

An examination of Tech Prep during its early stages of implementation revealed a variety of designs. Based on site visits conducted in 1990-1991, Dornsife (1992) observed that this variation was primarily a reflection of differences among individual schools. In general, program development was guided by the following definition of articulation: the coordination of educational systems, and the development of curriculum that prevents duplication of course work and offers secondary students advanced placement or advanced skill competence.

Articulation models

Whether schools offered individual courses or a sequence of courses, most schools referred to articulated curriculum between secondary and postsecondary institutions as 2+2 programs, or some variation, such as 4+2 or 2+2+2. Furthermore, many schools described their programs as Tech Prep primarily because the curriculum was associated with vocational or technical program areas (e.g., business, health occupations, engineering) or included courses intended to provide preparation for technical careers. In fact, McKinney, Fields, Kurth, and Kelly (1989) found in a national survey of secondary and postsecondary educational institutions engaged in articulation programs for at least three years that fewer than ten percent were using a Tech Prep approach. A year later, a national survey conducted by the Task Force on Occupational Program Articulation of the National Council on Occupational Education concurred that only a limited percentage of programs, roughly thirty percent, were Tech Prep.

This Tech Prep label did not necessarily imply the characteristics first prescribed by Parnell (1985). The popular 2+2 version, often referred to as Tech Prep, was designed so students could enroll in individual classes, or a sequence of courses, during the last two years of high school, and complete their training after two years of postsecondary course work. An expanded version of this model was the 4+2 program where students enrolled in courses beginning in the ninth grade, and completed their training after two years of postsecondary course work.

Still another variation is the 2+2+2 program where students enroll in classes during the last two years of high school, continue their training with two years of community college course work, and finish a program of study in the last two years of a four-year college.

Continued on next page

Variation in Articulated Curriculum, continued

Academic courses vary

All schools involved in research conducted by Dornsife (1992) acknowledged the importance of including appropriate academic courses—math, science, and English—in Tech Prep. However, the actual selection of individual courses and the use of a core sequence of academic courses varied from school to school. For instance, some schools strongly recommended that students in Tech Prep enroll in a selection of routinely offered academic courses such as algebra, English, and physics. In others, students were encouraged, or required, to enroll in a sequence of applied-academic courses such as Applied Mathematics, Applied Communications, and Principles of Technology. While both approaches were described as part of Tech Prep, they could result in very different educational experiences for students. Questions about the comparability and quality of these approaches continue to be raised as Tech Prep is implemented more widely across the country.

Multiple exits

Finally, in many cases, when schools structured Tech Prep programs as a sequence of articulated vocational and academic classes, the intention was to offer students a program that included multiple exits on a career ladder (Dornsife, 1992). For instance, in the area of health occupations, students in 2+2 Tech Prep programs for nursing could enter the workforce after high school as a nurses aide, after one year of a community college program as licensed vocational nurses, or after two years of a community college program as registered nurses. The multiple exit or career ladder approach offered yet another strategy for designing curriculum for Tech Prep.

Research in Tech Prep

These variations have provided a test-bed for implementation of Tech Prep under the current federal legislation. While limited research has been done, results from these early attempts at Tech Prep are valuable in structuring planning and implementation processes needed to create today's Tech Prep initiatives.

Lessons Learned from Successful Articulation Efforts

Successful articulation

Studies of these early articulation initiatives focused primarily on the effectiveness of processes used in planning and implementation, not on the outcomes of the programs. Understanding what made these processes work or fail was seen as crucial as local consortia moved forward to implement Tech Prep. A number of researchers examined planning and implementation processes used by local programs to initiate articulated secondary to postsecondary programs (Arnold, 1987; Key, 1991; Long, Warmbrod, Faddis, & Lerner, 1986; McKinney, Fields, Kurth, & Kelly, 1988; and Task Force on Occupational Program Articulation, 1989).

These researchers identified rather consistently the importance of several processes for successfully articulating programs. These are

- vision and goal setting.
- system-wide policy making.
- administration, budgeting, and project management.
- program planning and development.
- curriculum review, development, and integration.
- marketing and recruitment.
- staff and leadership orientation, training, and development.
- program evaluation and outcomes assessment.

Advice to Tech Prep planners

To ensure the effectiveness of these components, these experts advise Tech Prep planners to

- gain commitment from executive-level administrators of institutions.
- ensure qualified and committed leadership at each participating institution.
- build strong working relationships among participating institutions.
- create rewards for progress made by participants.

These strategies may offer the cornerstones for implementation of any new Tech Prep initiative under current legislation.

The Tech Prep Education Act

The purpose of Perkins II

The stated purpose of the Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990 (commonly known as Perkins II) was to make the United States more competitive in the world economy by developing more fully the occupational and academic skills of all segments of the population.

Perkins II proposes to accomplish this purpose by improving educational programs leading to competencies needed to work in a technologically-advanced society. One of the new programs that was proposed to accomplish this goal was Tech Prep. According to the Tech Prep Education Act (Title IIIE of Perkins II), Tech Prep must be developed by consortia comprised of secondary and postsecondary educational institutions. Tech Prep programs must be carried out

- under articulation agreements.
- with 2+2 articulation including a common core of mathematics, science, communications, and technologies courses.
- to meet the needs of institutions participating in the consortium.

The definition of Tech Prep

According to Perkins II, Tech Prep education programs mean a combined secondary and postsecondary program which

1. leads to an associate degree or 2-year certificate;
2. provides technical preparation in at least 1 field of engineering technology, applied science, mechanical, industrial, or practical art or trade, or agriculture, health, or business;
3. builds student competence in mathematics, science, and communications (including through applied academics) through a sequential course of study; and
4. leads to placement in employment.

Continued on next page

Preferred components

In developing regulations for the Tech Prep Education Act, the U.S. Department of Education specified desirable components of Tech Prep as those which do the following:

- provide for effective employment placement activities or transfer of students to four-year baccalaureate degree programs.
- are developed in consultation with business, industry, and labor unions.
- address the issues of dropout prevention and re-entry and the needs of minority youth of limited English proficiency, youth with handicaps, and disadvantaged youth.

Implementation of Tech Prep

Planning and implementation of new Tech Prep initiatives are in the hands of states and local consortia due to the formula funding mechanism prescribed by Congress. The legislation is general; however, it does specify some components of Tech Prep, thereby providing indicators of what must be developed for full implementation. These components include the following:

- 2+2 articulated curriculum
- in-service training for teachers and counselors
- equal access for members of special populations
- preparatory services

Continued on next page

The Intended Impact of Tech Prep

Preferred outcomes

Why implement Tech Prep? Why undertake development of such a comprehensive and complex educational initiative? The intended impact of Tech Prep may be felt in the following areas:

- Student learning and academic progress — by creating more relevant, active, and integrated educational opportunities
- Faculty involvement — by enhancing the role of faculty in curriculum development and articulation across all educational levels
- Educational system efficiency — by strengthening administrative and curricular efforts across all levels of educational systems
- Workforce preparation — by creating for students a more academically- and technically-challenging pathway to careers
- Economic competitiveness — by preparing America's youth for citizenship, further education, and productive employment
- Community confidence — by demonstrating the value of education to the public

The challenge to reform education with Tech Prep must be taken seriously. Rigorous assessment is needed to understand outcomes that can be expected to occur as a result of this new initiative. Understanding the impact Tech Prep has on educational reform and economic competitiveness is essential to the future of the initiative.

References

Arnold, J. (1987). *Articulating secondary and postsecondary occupational progress.* In C. R. Doty (Ed.), *New directions for community college, 58*, 57-68.

Bender, L. (1973). *Articulation of secondary and postsecondary occupational education programs.* Columbus, OH: Center for Vocational and Technical Education. (ERIC Document Reproduction Service No. ED 090 392)

Commission of Excellence in Education. (1983). *A nation at risk.* Washington, DC: U.S. Department of Education.

Dornsife, C. V. (1991). *Beyond articulation: the development of Tech Prep Programs.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Hanson, E. M. (1991). *Educational administration and organizational behavior.* (3rd Ed.). Boston, MA: Allyn and Bacon.

Hull, D. & Parnell, D. (1991). *Tech Prep associate degree.* Waco, TX: Center for Occupational Research and Development.

Key, C. (1991). *Building a transportable model for Tech Prep system geared for the twenty-first century.* Unpublished doctoral dissertation, University of Texas at Austin.

Long, J., Warmbrod, C., Faddis, C., & Lerner, M. (1986). *Avenues for articulation, coordinating secondary and postsecondary programs.* Columbus: National Center for Research in Vocational Education, Ohio State University.

McKinney, F., Fields, E., Kurth, P., & Kelly, F. (1988). *Factors influencing success of secondary/postsecondary vocational-technical education articulation programs.* Columbus: National Center for Research in National Education, Ohio State University.

National Commission on Secondary Vocational Education. (1984). *The unfinished agenda. The role of occupational education the high school.* Washington, D. C.: Office of Vocational and Adult Education. (ERIC Document Reproduction Service No. ED 251 622)

101st Congress, 2nd session (1990, August 2), The Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990, P.L. 101-392, Title III, Part E—Tech Prep Program.

Continued on next page

References, continued

Oregon State Board of Education. (1968). *An approach to the articulation and coordination of occupational preparatory curricula from the high school through the community college*. Paper and reports of Task Forces I and II. Salem: Oregon State Department of Employment and Oregon State Department of Education. (ERIC Document Reproduction Service No. ED 031 570)

Parnell, D. (1985). *The neglected majority*. Washington, DC: Community College Press.

Southern Growth Policies Board (1989). *Turning to technology. A strategic plan for the nineties. A report of the Southern Technology Council*. Research Triangle Park, NC: Author. (ERIC Document Reproduction Service No. ED 309 287)

Task Force on Occupational Program Articulation of the National Council for Occupational Education. (1989). *Occupational program articulation*. Washington DC: National Council for Occupational Education, An Affiliate of the American Association of Community Colleges.

Tri-County Technical College. (1990). *Tech Prep program description*. Pendleton, SC: Partnership for Academic and Career Education (PACE).

Chapter 3

Tech Prep and Educational Reform

Carolyn J. Dornsife

Overview

Background

While the seeds of Tech Prep were planted and nurtured in the 1980s, the need for comprehensive educational reform also became increasingly apparent. This need became especially important as America's economy grew less competitive and resources for public education became more and more scarce. In the 1990s, schools continue to need to educate more students to considerably higher levels and to use resources more effectively in doing so. It appears that Tech Prep may be one avenue to accomplishing this crucial goal.

In this chapter

This chapter presents the objectives of the educational reform movement and describes how Tech Prep represents one of the most ambitious examples of it. Before turning to this discussion, it is important to note that this chapter focuses on secondary educational reform issues; it does not include postsecondary reforms. Although Tech Prep programs include both the secondary and postsecondary educational levels, this omission is not an oversight. Rather, it stems from a recognition that, in most if not all cases, significant curriculum and administrative changes currently take place at the secondary level. (Please see Grubb and Kraskouskas [1992] and AACJC [1988] for a more thorough discussion of postsecondary educational reform.)

This chapter is organized as follows:

Topic	See Page
Accepting the Reality of Reform	3-2
An Overview of Four Aspects of Restructuring	3-4
Curriculum, Instruction, and Tech Prep	3-7
Authority, Decision Making, and Tech Prep	3-11
New Staff Roles and Tech Prep	3-12
Accountability Systems and Tech Prep	3-13
Challenges to Tech Prep Implementation	3-14
Federal Support for Tech Prep	3-15
References	3-17

Accepting the Reality of Reform

Three reasons for reform

The need for reform of education in America is rooted in three inescapable realities. First, the economic vigor of the states and their citizens is increasingly dependent upon a well-educated and highly skilled workforce. Second, the vigor of our economy and the stability of our democracy requires schools and colleges to effectively educate all students. Third, public education is a big public business. On the average, states invest approximately thirty-seven percent of their annual budgets in education (Cohen, 1988). With a commitment of resources on this scale, and in light of competing demands for scarce state resources, improving both the efficiency and the productivity of the education system must be a continuing concern for all policymakers. In short, productivity of the education system must increase dramatically.

Accepting reality

In recognition of the realities of reform, the Carnegie Forum on Education and the Economy, the National Governors' Association, and others, issued reports calling for "a dramatic improvement in our education system, a fundamental restructuring of the education system" (Cohen, 1988, p. 13). Published in 1986, these reports included: *A Nation Prepared* (Carnegie Forum on Education and the Economy), *Time for Results* (National Governors' Association), and *Children in Need* (New York Commission for Economic Development).

Political, business, and education leaders who provided the content of these reports called for fundamental restructuring because "schools must change the way they organize the work of students, teachers, and administrators to meet the increasing expectations and demands of society" (Cohen 1988 p. 13). Specifically, a fundamental restructuring requires attention to several aspects of the organization and structure of American schooling (Cohen, 1988; David, 1989). These are

- curriculum and instruction,
- authority and decision making,
- new staff roles, and
- accountability systems.

The President's Education Summit

To sustain the momentum fostered by these national calls for school restructuring, an important outcome of the President's Education Summit in 1989 was to underscore the need for rapid and radical change. In short, the summit gave new impetus for restructuring efforts, and the National Governors' Association assumed a leadership role in working with states on restructuring initiatives.

Continued on next page

Accepting the Reality of Reform, continued

Workforce preparation strategies

Finally, additional support for fundamental restructuring of America's schools was presented in several recent reports focusing on, among other topics, workforce preparation strategies. These reports include the following: *The National Education Goals Report: Building a Nation of Learners* (National Education Goals Panel, 1991), *America 2000* (U.S. Department of Education, 1991), *What Work Requires of Schools* (Secretary's Commission on Achieving Necessary Skills, SCANS, 1991), and *America's Choice* (Commission on the Skills of the American Workforce, 1990).

A call for change

The message from business, education, and policy leaders in these reports is a call for the following objectives:

1. A national assessment of student achievement and program quality in American schools,
2. An improvement in the critical thinking, ability to communicate, and problem-solving ability of secondary and postsecondary graduates, and
3. The learning of five sets of general competencies required for entry-level jobs, including those associated with
    - resources—organizing, planning, allocating
    - interpersonal skills—leading, negotiating, working on teams
    - using and acquiring information—interpreting and communicating information
    - understanding systems—social, organizational, and technological systems
    - working with technology—selecting, maintaining, and troubleshooting technologies

    Underlying these competencies are the following three sets of foundations:

    - basic skills—reading, writing, math, listening, and speaking
    - thinking skills—creative thinking, decision making, problem solving, visualizing symbols, reasoning, and knowing how to learn
    - personal qualities—responsibility, self-esteem, sociability, self-management, and integrity (SCANS, 1991).

An Overview of Four Aspects of Restructuring

Leadership role of NGA

The National Governors' Association (NGA) has provided a leadership role for working with states on restructuring initiatives (Cohen, 1988; David, 1989). Although other organizations and associations have publications on school restructuring, the NGA's position is examined because it incorporates a comprehensive focus. In addition, the NGA position is widely supported in the results of investigations by leading educational researchers on such topics as

- curriculum development (Neilsen, 1992);
- teacher preparation, professional development, new staff roles (Camp & Heath, 1992; Firestone & Bader, 1991; Goodlad, 1990; King & Kerchner, 1991; Lichtenstein, 1991; Wise, 1990);
- accountability and performance standards (Hill & Bonan, 1991; Hoachlander & Rahn, 1992);
- effective schools, site-based management, overall restructuring (Brandt, 1991; Joyce, 1991; Lieberman, 1990; Taylor & Levine, 1991).

In view of this strong support for educational reform, what does the NGA see as key aspects of restructuring? The NGA view is comprehensive and aggressive in addressing these four aspects of restructuring.

Restructuring: A different reform approach

Restructuring represents a very different approach to reform according to the NGA. It is a systemic approach that acknowledges the complexity of fundamentally changing the way schools are organized in order to significantly increase student learning. It shifts the focus of reform from mandating what educators do, to looking at the results their actions produce. Restructuring requires many pieces of the system to change. Four of the areas that require change follow:

- Curriculum and instruction
- Authority and decision making
- New staff roles
- Accountability systems

Each aspect of restructuring is introduced in this section of the chapter and more fully applied to Tech Prep in later sections.

Continued on next page

An Overview of Four Aspects of Restructuring, continued

Curriculum and instruction

Curriculum and instruction must be modified to promote the acquisition of basic and higher-order skills by all students. Subject matter and teaching that is now superficial, fragmented, and repetitious needs to change to emphasize applying skills, deep understanding, and cohesive knowledge. School goals and assessment tools must reflect these higher-order skills.

Teaching strategies must actively engage students in thinking rather than relegating them to passive roles and rote learning. In turn, this change in teaching strategies requires increased flexibility in the use of instructional time. It enables using learning activities that are substantially more challenging and engaging. Furthermore, it requires more varied grouping arrangements that go beyond conventional age-based groups and promote student interaction and cooperative efforts.

Authority and decision making

Authority and decision making must be decentralized so the most educationally important decisions are made at the school-site, not at the central office or the state capitol. Teachers, administrators, and parents need to work together to set the basic direction for the school and to determine the strategies, approaches, and organizational and instructional arrangements required to move in that direction.

New staff roles

New staff roles must be developed so that teachers can work together to improve instruction. New roles will enable effective teachers to support beginning teachers, to plan and develop new curricula, or to design and implement staff development programs. This support is rarely possible under current arrangements where the teacher's role is largely limited to instructing and supervising students. Other staff roles must change. Greater and more varied use of paraprofessionals should be considered.

Innovations in staff roles will require even more of principals who must provide the vision to help shape new school structures and organizational arrangements. They too must possess the skills to lead talented teachers. Principals also must be willing to take risks in an environment that rewards performance rather than compliance.

Continued on next page

An Overview of the Four Aspects of Restructuring, continued

New staff roles (continued)

In district offices and state departments of education, restructuring requires analogous changes in roles. Administrators must shift from rule enforcement to assistance and, like teachers, anticipate continuous professional learning. Preparing educators for these new roles will require profound changes in professional preparation programs and in licensure and certification standards and procedures. Institutions of higher education must be prepared to respond to these challenges.

Accountability

Accountability systems must clearly link incentives and rewards to student performance at the building level. Currently, accountability means holding schools responsible for complying with federal, state, and local rules and regulations. In the future, schools must have more discretion and authority to achieve results and then be held accountable for them. States must develop measures to assess valued performance outcomes of individual schools and link rewards and sanctions to these results.

State actions

More specifically, states must undertake the following actions:

- Link the accountability system to the assessment system, so accountability focuses primarily on how well schools produce desired results framed in terms of school goals.
- Fashion systems that focus on both the school building and the school district simultaneously.
- Set appropriate performance standards for schools (absolute standards, comparative standards, or improvement standards.)
- Link reward to performance so that a variety of forms of rewards, such as recognition or flexibility, are used. Discretionary dollars for the school building should be an important feature of any reward system.
- Develop appropriate forms of intervention for schools that persistently fail to show improvement or meet performance standards.

Curriculum, Instruction, and Tech Prep

Tech Prep curriculum and the restructuring movement

At the heart of Tech Prep is the development of articulated curriculum between secondary and postsecondary institutions. More specifically, Tech Prep includes a sequence of courses in a vocational-technical and academic core curriculum that is designed to provide the student with training along a career ladder.

Before describing Tech Prep curriculum more thoroughly, it is apparent that, by definition, the use of articulated curriculum meets the call for change in educational goals and instructional content. For example, the concept of articulation is defined in terms of process, the coordination of educational systems, and outcome, to prevent duplication.

In addition, the most general and interrelated purposes of articulation are

- to increase services to students.
- improve educational programs.
- increase student retention.
- reduce program costs.
- encourage student career development through improved programming.
- increase the time available for vocational training programs.
- facilitate the transition of students from one educational level to another.
- increase the number and quality of graduates available for business and industry.

Essential elements of articulation

Perhaps most importantly, there are a number of essential elements associated with the process of articulation. These elements are described by Long, Warmbrod, Faddis, and Lerner (1986) as the ten principles of articulation success. They mirror the planning and implementation philosophy put forth by leaders in the restructuring movement.

Continued on next page

Essential elements of articulation (continued)

The ten principles are

1. Leadership and commitment from the top.
2. Early faculty involvement.
3. Relationships based on mutual respect and trust.
4. Mutual benefits to all partners.
5. Written articulation agreements.
6. Open, clear, and frequent communications.
7. Modest initial goals.
8. Clearly defined responsibilities.
9. Competency-based curricula.
10. Common focus on mutual goals rather than individual turf (Long et al., 1986, 31-38).

(See Appendix C for a detailed discussion of each principle).

Articulated curriculum

Turning to curriculum per se, articulated courses are typically modified by integrating new occupation-related information and skills. Most secondary schools use competency-based curriculum to offer students a sequence of courses in one or more vocational-technical program areas. In most cases, each course in the sequence is articulated with a postsecondary institution, and the student can earn either advanced placement or advanced skill competence credit.

Competency-based curriculum

Again, almost by definition, the use of competency-based curriculum and a sequence of courses meets the challenges of restructuring advocates. For instance, some competency-based curriculum includes a criterion-referenced testing component. These tests provide a means of measuring a student's performance or knowledge in relation to a specific set of behaviors or skills. In this way, criterion-referenced tests measure what students know or can do. Mastery is based on meeting the specific criteria.

Ideally, the student experiences little test anxiety because he or she has access to the performance tests from the outset of a task. By providing this access the student has a concrete reminder of what is necessary to attain proficiency in an area. When students feel they have mastered the requisite skills, they can choose to take a performance test, if required.

Continued on next page

Curriculum, Instruction, and Tech Prep, continued

Competency-based curriculum (continued)

Furthermore, by using this curriculum the student learns vocational-technical competencies for entry-level and advanced-level positions, and in some cases academic competencies (e.g., the state of Massachusetts provides curriculum guides for math and/or science competencies in eighteen vocational areas).

New courses for Tech Prep

In addition to using competency-based curriculum, Tech Prep programs incorporate new courses, typically synonymous with the integration of applied academic courses. These courses emphasize the acquisition of academic principles and concepts through classroom and laboratory activities that connect abstract knowledge to workplace application.

The most widely used applied academic courses have been developed by the Center for Occupational Research and Development (CORD). They are

- Principles of Technology,
- Applied Mathematics, and
- Applied Communications.

Applied Biology and Chemistry courses are currently being pilot tested, and Applied Math II is being planned. These courses are intended to serve as alternative core curricula in math, science, and English.

Advantages

Advantages of modifying curriculum, integrating new courses, and articulating curriculum across educational systems are numerous. Six advantages are identified below:

- Schools benefit from teachers collaborating and changing secondary classes to prepare students better for postsecondary course work.
- Students benefit from improved curriculum that provides tangible information and applicable training for careers in current occupational areas. Students can see relationships between schooling and preparation for work.
- Competency-based curriculum offers coursework that can provide an identifiable career path for students, teachers, and parents.

Continued on next page

Curriculum, Instruction, and Tech Prep, continued

Advantages (continued)

- Competency-based education creates a system of instruction and evaluation that is directed toward measurable results by focusing on the skills necessary in a particular field.
- Teachers benefit by having curriculum materials that they can modify or use as a package.
- Teachers enjoy teaching applied academic courses because the curriculum is already developed; this includes lab demonstration materials, problem sets, student learning activities, group exercises, and evaluation and testing items.

Authority, Decision Making, and Tech Prep

Tech Prep organization

Planning and implementing Tech Prep is part of a long-term and complex process requiring the coordination of numerous activities carried out by members of several committees. These committees represent an organizational structure or foundation for Tech Prep. As a result, school-site personnel who serve on these committees also make an array of decisions that guide program development. In short, the structure of Tech Prep goes well beyond the restructuring advocates' call.

Committee structure

In terms of specific committees, who the members are, and what responsibilities they have, there is no required number of committees, but there is a relationship between the components of Tech Prep and the committee structure.

Four general components that can serve as the foundation for Tech Prep can correspond to the core committee structure. These are

- information/marketing campaigns,
- curriculum development,
- career guidance, and
- program evaluation (Dornsife, 1992).

In addition to these committees, most Tech Prep initiatives include an executive committee and an administration and coordination committee. (For a more indepth discussion of consortia committee structures, see Chapters 6-9.)

Committee members

Members who serve on these committees include representatives from all stakeholder groups, including education, business, industry, labor, and the community at large. For instance, the administrative and coordination committee typically includes deans, assistant superintendents, principals, personnel managers, and occupational specialists. The curriculum development committee includes vocational and instructional deans, department chairpersons, curriculum specialists, supervisors of entry-level personnel, and/or representatives from state licensing boards.

New Staff Roles and Tech Prep

Nurturing new roles

Although the various stakeholder groups are not complete strangers to one another, it is clear that true collaboration requires the identification and nurturing of many new roles. For instance, through their committee participation, high school principals and community college deans help develop a vision for Tech Prep.

Secondary and postsecondary faculty, both vocational and academic, must work with business and industry representatives to develop competency-based curriculum, and to integrate vocational and academic course work.

In short, Tech Prep initiatives require coordination of multiple component activities. Consequently, all participants must be innovative and take risks in an environment that typically rewards compliance rather than performance.

New roles for staff development

The critical role of staff development in implementation of Tech Prep requires new staff roles as well. In an optimal model, the planning and implementation of Tech Prep conducted by faculty can become intertwined with their own skill and knowledge development. By examining and considering new technologies, instructional strategies, management approaches, or assessment techniques for a new Tech Prep initiate, faculty are "learning by doing," much like approaches currently advocated to enhance student learning.

State and regional staff roles

Many state and regional departments of education view Tech Prep as an opportunity to facilitate reform. The role played by staff at these levels is one of advocating change, providing options along with resources, carrying out technical assistance, supporting implementation, and guiding evaluation. Gone are the days of heavy-handed enforcement of rules for administering educational programs. The contemporary goal of state and regional staff is to facilitate significant change that can lead to improved programs.

Teacher education roles

Restructuring seems to have turned education on its head; on the one hand, teacher roles go beyond instruction to curriculum development and administration. On the other hand, administrator roles may involve instructing, supervising, or counseling students. Tech Prep has created this same dilemma. It is the role of teacher education to examine this environment and redefine teacher and administrator preparation programs to be responsive to the needs of personnel in restructured schools and colleges.

Accountability Systems and Tech Prep

Accountability at the building level

As with the other aspects of restructuring, accountability systems must clearly link incentives and rewards to student performance at the building level. Rather than holding schools responsible for complying with federal, state, and local regulations, schools need more discretion and authority to achieve the results and goals they identify.

For instance, in agreement with restructuring advocates, Tech Prep initiatives must incorporate the use of assessment tools geared to higher-order skills. These tools require students to demonstrate competency, and to synthesize, integrate, and apply knowledge and data to complex problems.

Linking educational goals to state testing

The first step to making these changes is to link educational goals to state testing and assessment programs. In many states, this requires replacing existing minimum competency tests, which focus exclusively on basic skills, with newly developed instruments for assessing higher-order skills.

As with nurturing any change, the implementation of new assessment tools for Tech Prep has been slow. Program stakeholders, including state coordinators and representatives, recognize the need for accountability systems that directly influence the nature of educational practices by regulating teaching methods or curriculum content. However, the move to incorporate competency testing into education policy frameworks has been slow, and typically focused on basic skill performance.

Alternative assessment

In general, the very nature of Tech Prep calls for the development of alternative assessment techniques, such as student portfolios and senior projects. In some schools (e.g., Richmond County, North Carolina) administrators are experimenting with a system of rewards and incentives for teachers to ensure that students complete the program. This school is perhaps exemplary because it is collecting and using information on educational outcomes—student performance—as part of its accountability system.

These changes are in a trend-setting school system. However, more districts will follow as states provide ongoing implementation support and technical assistance to try new assessment approaches.

Challenges to Tech Prep Implementation

Commentary

Fortunately, the interest level in Tech Prep is high, and with federal support through the Tech Prep Education Act of 1990, the anxiety of newcomers has been reduced and growth of Tech Prep enhanced. Yet, this support creates pressure for schools to articulate curriculum. As a result of feeling this pressure, many secondary and postsecondary institutions seem to have pursued the less-demanding process of developing articulated curriculum agreements that provide advanced placement.

Some institutions have developed Tech Prep solely on the basis of establishing advanced placement curriculum agreements. On the one hand, such efforts have allowed these institutions to spend less time and financial resources on developing effective working partnerships across educational levels and on saving students' time and tuition money.

On the other hand, Tech Prep initiatives based solely on courses that offer advanced placement may not provide the foundation of complex skills and knowledge that graduates need to enter the labor force or a postsecondary institution.

Advanced placement vs. advanced skills

As more education personnel extend their efforts to developing advanced skills agreements, it is likely that the results will lead to a new direction. This direction should be driven by

- a renewed sense of service to students and community,
- a demand for educational excellence, and
- a need to get the most out of shrinking finances at a time of declining enrollments.

Most importantly, the direction reflects an understanding of the impact of new technologies on technical occupations, and a need to provide appropriate training to meet the accompanying changes in skill requirements. Those educators who have turned in this direction acknowledge that the benefits from planning and implementing Tech Prep focused on advanced skills and occupational training for technical careers greatly outweigh monetary costs and staff time.

Educational reform through Tech Prep

As for the educational reform movement in general, the call is for comprehensive changes that can only occur by identifying and carrying out long-term objectives. Just as the restructuring leaders recognize the need for creating new and strong alliances and building networks, stakeholders in Tech Prep recognize how to use federal funds as a discretionary resource for initiating and improving programs.

Federal Support for Tech Prep

Perkins I

In short, the Carl D. Perkins Vocational Education Act of 1984 (Perkins I) was designed to give states wide latitude in the content and range of programs and supplemental services (Elmore, 1987). In providing this latitude, Perkins I earmarked funds for program improvement, innovation, and expansion. It also provided a mechanism by which some states initiated the development of Tech Prep. This foundation was significantly enhanced with the reauthorization of the Perkins Act, which includes the Tech Prep Education Act of 1990.

The Tech Prep Education Act

The purpose of the Tech Prep Education Act is to initiate action, and to muster the political support to construct a successful education coalition. The Act does not specify exactly what is to be done nor does it address anticipated solutions to operating problems. Instead, state and local administrators—direct providers of education and training—and clients of the system provide the missing information about what constitutes a good program.

However, the Act does set the frame of reference for determining what problems are important and what outcomes are regarded as success. Again, administrators and service deliverers in certain key implementation roles must fill in the details of this problem at their level. They must bring the resources of organizations and individuals to bear on the solution.

Determinants of success

The success of the Tech Prep Education Act will, in part, be determined by the extent to which it helps to mobilize the skills, resources, and incentives of key actors around the problems that policymakers consider important. Determinants of success lie in the attributes of the organizations and individuals that implement them.

Program improvement

Finally, and perhaps most importantly, administrators must not limit themselves to using only federal funds for program improvement in vocational education. Local and state funds must be allocated for these purposes, and interagency cooperation needs to be established between providers of education and training programs.

Continued on next page

Federal Support for Tech Prep, continued

Program improvement (continued)

Particularly at the local level, federal funding has been an important resource, but rarely used as a catalyst for change. Perhaps the availability of Tech Prep Education Act funds will provide the stimulus for launching these new innovative activities.

Given the current state of educational reform, increasingly limited resources and over-extended personnel, federal funds may make a significant contribution to positive changes in vocational education programs at both secondary and postsecondary institutions. These Tech Prep funds may prove to be instrumental to restructuring education in a way that best serves America's citizens.

References

American Association of Community and Junior Colleges (AACJC). (1988). *Building communities: A vision for a new century. A report of the commission on the future of community colleges.* Washington, DC: Author.

Brandt, R. (1991). "On restructuring schools: A conversation with Mike Cohen." *Educational Leadership, 48*(5), 54-58.

Carnegie Forum on Education and the Economy. (1986). *A nation prepared: Teachers for the 21st century. Report of the task force on teaching as a profession.* Washington, DC: Author.

Cohen, M. (1988). *Restructuring the education system: Agenda for the 1990s.* Washington, DC: National Governors' Association. (ERIC Document Reprodution Service No. ED 320 222)

Commission on the Skills of the American Workforce. (1990). *America's choice: High skills or low wages!* Rochester, NY: National Center on Education and the Economy.

David, J. (1989). *Restructuring in progress: Lessons from pioneering districts.* Washington, DC: National Governors' Association. (ERIC Document Reproduction Service No. ED 320 221)

Dornsife, C. (1992). *Beyond articulation: The developmont of Tech Prep programs.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Elmore, R. (1987). Analyzing the implementation of federal vocational education policy: The Perkins Act of 1984. In, Policy Studies Associates, Inc., *Design papers for national assessment of vocational education. Proceedings of the national conference on the condition of vocational education,* pp. 333-359. (ERIC Document Reproduction Service No. ED 283 020)

Firestone, E., & Bader, B. (1991). Restructuring teaching: An assessment of frequently considered options. *Education Policy, 5*(2), 119-136.

Goodlad, J. (1990). Better teachers for our nation's schools. *Phi Delta Kappan, 72*(3), 185-194.

Grubb, N. & Kraskouskas, E. (1992). *A time to every purpose: Integrating occupational and academic education in communities colleges and technical institutes.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Continued on next page

Heath-Camp, B., & Camp, W. (1992). *Induction experiences and needs of beginning vocational teachers without teacher education backgrounds*. Berkeley: National Center for Research in Vocational Education at University of California at Berkeley.

Hill, P. & Bonan, J. (1991). *Decentralization and accountability in public education*. Santa Monica, CA: RAND Corporation. (ERIC Document Reproduction Service No. ED 344 665)

Hoachlander, G. & Rahn, M. (1992). *Performance measures and standards for vocational education: 1991 survey results*. Berkeley: National Center for Research in Vocational Education at University of California at Berkeley.

Joyce, B. (1991). The doors to school improvement. *Educational Leadership, 48*(8), 59-62.

King, B. & Kerchner, C. (1991, April). Defining principal leadership in an era of teacher empowerment. Paper presented at the Annual Meeting of American Educational Research Association, Chicago, Illinois. (ERIC Document Reproduction Service No. ED 336 862)

Lichtenstein, G. (1991). Teacher empowerment and professional knowledge. Presentation for the Consortium for Policy Research in Education, New Brunswick, NJ. (ERIC Document Reproduction Service No. ED 337 857)

Lieberman, A. (1990). *Schools as collaborative cultures: Creating the future now*. Bristol, PA: Falmer Press. (ERIC Document Reproduction Service No. ED 333 064)

Long, J., Warmbrod, C., Faddis, C., & Lerner, M. (1986). *Avenues for articulation: Coordinating secondary and postsecondary programs*. Columbus: National Center for Research in Vocational Education, Ohio State University.

National Education Goals Panel. (1991). *National educational goals report: Building a nation of learners*. Washington, DC: National Council of Education Studies and Testing.

National Governors' Association. (1986). *Time for results: The governors' 1991 report on education*. Washington, DC: Author.

Continued on next page

References, continued

Neilsen, E. (1992). *Educational reform and the integration of academic and vocational education.* Unpublished monograph. Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

New York Commission for Economic Development. (1987). *Children in need: Investment strategies for the education disadvantaged: A statement.* New York: New York Commission for Economic Development.

Secretary's Commission on Achieving Necessary Skills (1991). *What work requires of schools: A SCANS report for America 2000.* Washington, DC: U.S. Department of Labor.

Taylor, B. & Levine, D. (1991). Effective schools projects and school-based management. *Phi Delta Kappan, 72*(5), 394-397.

Wise, A. (1990). Six steps to teacher professionalism. *Educational Leadership, 47*(7), 57-60.

U.S. Department of Education. (1991). *America 2000: An education strategy.* Washington, DC: Author.

Chapter 4

Initiation of Tech Prep by the Fifty States

James D. Layton and Debra D. Bragg

Overview

Background

On July 1, 1991, the Perkins II Tech Prep Education Act came into effect. At that time, states were authorized to award grants to local consortia to establish Tech Prep. To better understand the impact of this new legislation, a research study was conducted by NCRVE personnel to document the initial start-up of Tech Prep by the states.

Objectives of the study

The overall objectives of the study were to

- describe goals, philosophies, policies, and practices associated with state implementation of Tech Prep.
- examine the context in which Tech Prep was being implemented and consider how it influenced the implementation processes occurring in the states.

In this chapter

This chapter focuses discussion on the following topics:

Topic	See Page
Fifty-State Tech Prep Survey	4-2
Summary of Findings on Grants	4-3
Tech Prep Philosophies and Policies	4-5
Components of State and Local Tech Prep Initiatives	4-7
Conclusions and Recommendations	4-16
References	4-18

Fifty-State Tech Prep Survey

Data collection

This research study was designed to determine the status of Tech Prep planning and implementation in the fifty states and the District of Columbia during the initial and second year of funding. Data were collected by mail and telephone beginning in September 1991. A second-year survey was conducted in September of 1992 to gather follow-up data. Respondents to both surveys were asked to supply documents to illustrate answers to survey questions and to supplement survey data.

Respondents to the study were the designated state Tech Prep leaders, seventy percent of whom held that position at the time of both surveys.

The following table illustrates the data collection efforts used for this study.

Method	Type of data collected
1991 Fifty-State telephone survey	• State policies and administration procedures • State agency award processes and outputs • Local grant award processes and outputs
1992 Fifty-State telephone survey	• Local grant award outputs • Evaluation procedures development • Staff development activities • Marketing activities • Barriers to implementation • Successes • Policy changes
Supplementary data collection for 1991 and 1992 surveys	• Policy statements • Planning documents • Requests for proposals (RFPs) • Marketing materials • Technical reports • Evaluation reports

Continued on next page

Summary of Findings on Grants

Grants to local consortia

By the spring of 1992, all fifty states and the District of Columbia made Tech Prep grant awards. The majority were completed by December 1991. In this initial year, all but one state awarded planning grants; thirteen states gave more than one type of grant, usually both planning and implementation grants. One state awarded only demonstration grants.

In Fiscal Year (FY) '92, approximately eighty percent of all grants awarded by the states were for planning (Table 1). Only about five percent of the states awarded grants for demonstration or exemplary sites.

In FY'93, planning grants accounted for forty-two percent of the total, while implementation grants stood at fifty-six percent. Demonstration grants were awarded by eight percent of the states (Table 1). These data suggest that Tech Prep initiatives are progressing throughout the country. Appendix B provides a summary of grants awarded by the fifty states during the FY'92 and FY'93 funding cycles.

Table 1
Tech Prep grants awarded in FY'92 and '93

Grant Types	Number of Grants FY'92	Number of Continuing Grants FY'93	Number of New Grants FY'93	FY'93 Total
Planning	591	161	201	362
Implementation	89	450	37	487
Demonstration/ Exemplary Continuing	44	15	0	15
Totals	724	626	238	864

Note: N = 51 unless otherwise indicated.

Grants processes

Competitive grant processes were predominant in awarding Tech Prep funds to local consortia (Table 2). Many state agency personnel described the use of this approach as critical to facilitating successful models and practices that could be disseminated throughout their state. A few used a formula approach to ensure some level of funding to all local consortia.

Continued on next page

Summary of Findings on Grants, continued

Grants processes (continued)

Three states used both competitive and formula approaches during the initial year. An example of this approach was used by the state of Michigan where local consortia were awarded a small amount of money to get Tech Prep started. Then, the state awarded larger competitive grants six months to one year later to help these consortia implement promising plans.

Table 2
Distribution of states by grant process

Grant Process	Frequency
Competitive	43
Formula	5
Combination Formula & Competitive	3

Average funding levels

Funding levels varied greatly among the fifty states. In FY'92, planning grants ranged from $5,000 to $250,000; continuing planning grants in FY'93 ranged from $15,000 to $358,000 (a single statewide grant); new planning grants ranged from $5,000 to $300,000.

Implementation grants showed similar variations. In FY'92 implementation grants ranged from $150,000 to $280,000; continuing implementation grants ranged from $25,000 to $217,000; new implementation grants ranged from $15,000 to $150,000.

Table 3
Average level of funding by grant type in FY'92

	Funding Levels		
Grant Type	Avg. $/State FY'92	Avg. $/State Continuing FY'92	Avg. $/State New FY'93
Planning	$ 56,000	$70,000	$66,000
Implementation	124,000	99,000	74,000
Demonstration/ Exemplary	180,000	234,000	NA

Tech Prep Philosophies and Policies

Predominant policies among states

The fifty states espoused fairly similar policies and philosophies to begin implementation of Tech Prep. Nearly all the states described the primary driving force behind their Tech Prep policy was the federal Perkins II legislation.

Among the common statements offered by the states for the purpose of implementing Tech Prep were

- to ensure better transition of youth from school to work.
- to provide applied academics and employability skills.
- to provide a comprehensive career preparation program that should begin earlier than high school.
- to serve the "neglected majority."
- to eliminate the general track.
- to require advanced technical skills programs.
- to eliminate redundancy between secondary and post-secondary education.
- to provide the solution for common schooling problems.
- to assist in moving toward competency-based curricula.
- to upgrade vocational curricula and strengthen the academic focus.

In September 1992, the survey requested respondents to describe changes in policies that had occurred in the past year. Only fourteen of the states indicated that they had made policy changes, many of which were viewed as minor. These were

- additional high school graduation requirements.
- additional outcomes, expectations, and requirements.
- shifts in emphasis from specific occupations to clusters.
- more control at the state level.
- increased emphasis on program development.
- added funding priorities and assurances.

Tech Prep and vocational education

There were two divergent perspectives expressed by the states concerning the relationship between Tech Prep and vocational education. In the first, Tech Prep was viewed as a reform of vocational education and a vital part of attempts to upgrade it. In the other, Tech Prep was not seen as vocational education but as a larger educational restructuring effort involving vocational and academic education.

Continued on next page

Tech Prep Philosophies and Policies, continued

Tech Prep and vocational education (continued)

Illustrative of the first perspective, Arkansas has enacted legislation requiring a Tech Prep core curriculum be implemented by 1993 and recommending that restructuring take place around two educational options: college prep and Tech Prep. With regard to the second view, Oregon made Tech Prep part of an ambitious plan to reform and restructure the educational system based on a skills-enhanced approach. Similarly to Oregon, Texas made Tech Prep part of plans to reform the total educational system. State-mandated graduation guidelines endorsed the Tech Prep path.

Legislative approaches to Tech Prep

Other states have taken a legislative approach to Tech Prep policy. Legislation enacted in 1991 in Wisconsin required each school board establish a Tech Prep program in each public high school in a district in coordination with vocational, technical, and adult education district directors. New York legislated the Work Force Preparation Program, which essentially mirrored the federal Tech Prep legislation at the state level.

In South Carolina, an amendment to the state plan called for a Tech Prep education program entitled "Preparation for the Technologies," which again echoed the federal program. In addition, the legislation called for a restructuring of the Department of Education to transform it from a regulatory agency to a service agency as part of the state's Total Quality Education effort.

Components of State and Local Tech Prep Initiatives

Administrative structures

The majority of the states, sixty-four percent, reported that administrative functions fell under the purview of the state's secondary vocational education agency. Only twenty percent of the states indicated that a higher education/community college agency was responsible for administering Tech Prep. Even fewer, fourteen percent, of the states reported a formal joint administration arrangement between secondary and postsecondary state agencies. North Dakota was unique among the states contracting with a state college to administer its Tech Prep initiative.

Staffing

In the initial survey, respondents were asked to supply the number of staff involved with Tech Prep in the state's administering agencies; the question was ambiguous, but in most cases responses were given in full-time equivalent (FTE) terms. In the second-year survey, respondents were asked specifically how many FTE staff were involved with Tech Prep at the state level. With these differences in approach, and possible discrepancies noted, it was interesting to compare staffing levels at the time of each survey. In September of 1991, twenty-nine states reported having one or less-than-one FTE person working on Tech Prep at the state level. In September 1992, the number had risen to thirty-nine. This finding may indicate that after Tech Prep was set in motion and underway, attention was diverted to other efforts. Nevertheless, one of the more commonly mentioned barriers to Tech Prep's implementation was the lack of staff, time, and money.

Planning structures

Although a few states reported formal joint agency administration of Tech Prep, most indicated the involvement of both their state's secondary and postsecondary state agencies at some level. In both the initial survey and the second-year survey, about one-half of the states indicated the involvement of various combinations of the following organizations and agencies:

- state labor, commerce, employment, JTPA, and economic development agencies
- state councils on vocational education and committee of practitioners
- Chambers of Commerce
- business, industry and labor groups
- nonprofit agencies

In the September 1992 survey, respondents were asked if the state had a planning/implementation team at the state level. Forty-three answered positively, eight negatively.

Continued on next page

Historical involvement

The majority of states reported having had some type of past experience with Tech Prep or related programs, usually in the form of 2+2 programs, articulation agreements, and use of applied academic courses. Most of these efforts have taken place since about 1985. (For more discussion of historical involvement by the states, see Chapter 2.)

Evaluation

Most states were still in the process of developing evaluation procedures for Tech Prep at the time of our initial survey in September 1991. States that had developed plans for evaluation described including evaluation requirements and criteria in their requests-for-proposals (RFPs) for Tech Prep consortia and planned to build on that foundation. Several states mentioned plans for on-site monitoring and self-evaluation as well as tracking enrollment and achievement.

South Carolina planned to use W. E. Deming's Total Quality Management (TQM) approach (1986) and incorporate Tech Prep into the state's "Total Quality Education" philosophy. Minnesota and Illinois had contracted their land-grant universities to conduct evaluation. Texas planned to award a contract for a third-party evaluation. West Virginia was developing a Tech Prep report card.

In the September 1992 survey, ten outcomes statements, gleaned from prominent literature sources, were presented to respondents to ascertain whether they had been established in their states. Respondents in nineteen states answered positively. These respondents were then read the list of ten outcomes and asked whether each of these was included in their state's list of outcomes (Table 4).

Continued on next page

Evaluation (continued)

Table 4
Percentage of states by outcome

Outcome	States (%)
Improved academic skills (e.g., communications, mathematics, science)	100
Improved secondary program completion rate	100
Improved job placement rate	90
Improved technical skills	84
Improved postsecondary program completion rate	79
Increased career awareness	79
Increased employer satisfaction	74
Improved problem-solving and critical thinking skills	63
Improved attitudes toward or perceptions of technical careers	42
Improved student self-esteem	37

Note: N = 19

Next, respondents were asked to identify additional outcomes not listed in the survey. These outcomes were

- increased enrollment in Tech Prep.
- increased enrollment in postsecondary institutions.
- increased credits earned for articulated courses.
- decreased remediation at the postsecondary level.
- increased employability at higher-wage jobs.
- improved access for special populations.
- improved personal skills.

Respondents were then asked to choose three outcomes that either the state or they personally ranked as among the three most important (Table 5).

Continued on next page

Evaluation (continued)

Table 5
Percentage of states ranking outcome as one of three most important

Outcome	States (%)
Improved academic skills (eg. communications, mathematics, science)	53
Improved secondary program completion rate	47
Improved technical skills	26
Improved problem-solving and critical thinking skills	21
Increased career awareness	21
Increased employer satisfaction	21
Improved job placement rate	10
Improved student self-esteem	5
Improved attitudes toward or perceptions of technical careers	0
Improved postsecondary program completion rate	0

Note: N = 19

These rankings seem to indicate a strong focus on the secondary level. As Tech Prep develops, it seems likely that there will be a shift in emphasis to postsecondary processes and outcomes.

Marketing

At the time the 1991 survey was conducted, almost half of the states reported either no state-wide marketing efforts or only preliminary marketing plans. States having developed marketing strategies had devised

- fliers and brochures.
- promotional items such as coffee mugs and pencils.
- videotaped programs.

Other activities often mentioned were marketing through staff development meetings and workshops. Some states had advertised Tech Prep on radio and television and in newspapers.

A few states described efforts to coordinate local marketing activities. This typically involved developing videotapes containing a common state message about Tech Prep that could be customized with information about local Tech Prep initiatives.

Continued on next page

Marketing (continued)

The September 1992 survey indicated that marketing activities had increased somewhat in the intervening year, with more states reporting plans for videos and print materials (Table 6).

Table 6
Marketing activities conducted in FY'92 and planned for FY'93

Activity	Conducted in FY'92	Planned for FY'93
Print materials	Printed materials of some kind (24 states)	Printed materials of some kind (33 states)
Video	Videos for general audiences (4 states), for educators (4 states), and for students and parents (2 states)	Videos for general audiences (15 states), for educators (5 states), and for students and parents (7 states)
Advertising	6 states	9 states
Public speaking	Public speaking by agency officials as a marketing activity (30 states)	Public speaking by agency officials as a marketing activity (30 states)

Staff development

State-supported staff development activities were usually held in conjunction with statewide meetings. Some held state and regional meetings specifically for Tech Prep. Most states convened orientation meetings when releasing RFPs and/or announcing grant recipients.

A few states had sponsored workshops for Tech Prep project directors and educational administrators. A number of states participated in the NCRVE teleconference in October of 1991 and conducted meetings around that event.

In the 1992 survey, thirteen states reported having had a statewide meeting for Tech Prep only; nine reported a statewide meeting in which a day was devoted to Tech Prep. Eighteen reported having had both a statewide meeting and devoted day to Tech Prep. Eleven had neither but had held at least one meeting concerning Tech Prep. Respondents were read a list of potential topics covered, and asked to

Continued on next page

Staff development (continued)

indicate whether the topic was covered during their state's meeting(s) (Table 7). Topics such as planning of Tech Prep, integration, and applied academics were addressed by nearly all states while work-based learning and new technologies were covered by only about one-half the states.

Table 7
Percentage of states by topics of meetings

Topic of meeting or workshop	States (%)
Planning a Tech Prep program	86
Integration of academic and technical education	86
Applied academics	86
Marketing Tech Prep	82
Guidance and counseling	80
Business and industry involvement	73
Student recruitment	73
Team building	65
Evaluation	63
Articulation guidelines/agreements	61
Barriers to implementation	61
Cooperative learning & instructional strategies	59
Involving parents and the community	55
Work-based learning	51
New technologies	49

Other topics of meetings reported were

- Tech Prep and special populations.
- Curriculum development and program design.
- Youth apprenticeship.
- Outcomes-based education.
- Total Quality Management.
- Preparatory services.
- Best practices.
- Review of guidelines and expectations.
- Entrepreneurship and applied economics.
- Learning styles.
- Strategic planning.
- Employability skills.
- Secondary and postsecondary collaboration.

Continued on next page

Barriers and successes

In the September 1992 survey, respondents were asked to pinpoint the major barrier to implementing Tech Prep in their states (Table 8). A wide variety of answers were given, and one state was unable to limit its response to only one barrier. Overall, the findings reveal that although there is not a single perceived major barrier, the following three predominate:

- negative attitudes on the part of educators, parents, and students toward vocational education,
- conflicts between secondary and postsecondary, and vocational and academic educators, and
- lack of needed resources.

It is apparent that, in the public view, Tech Prep is generally seen as being a part of or a continuation of vocational education, and that this perspective leads to some prejudging. As noted earlier (see pp. 4-6), this perspective has also been adopted by some state leaders. If this barrier is to be overcome, states must either make an effort to improve the image of vocational education, or put some philosophical distance between Tech Prep and vocational education.

On the other hand, where Tech Prep is seen as a total restructuring effort, other barriers impose themselves. A fear of and resistance to change leads to turf battles and difficulties in efforts at collaboration between traditionally separated groups. These barriers can, however, be seen in a more positive light. These conflicts may demonstrate that at least communication has begun and territories are no longer taken for granted.

Continued on next page

Barriers and successes (continued)

Table 8
Distribution of states by barriers to implement Tech Prep

Barrier	Frequency
Negative attitude toward vocational education and Tech Prep	14
Lack of staff, time, and money dedicated to Tech Prep	8
Turf battles between secondary and postsecondary educators	6
Looking at Tech Prep as vocational education by another name	5
Lack of collaboration between vocational and academic educators	4
College credit for applied academic courses	2
Dealing with local bureaucracy	1
Fear of educational and political protest	1
Seeing the need for change and effecting change	1
Lack of business and industry in the state	1
Keeping regions progressing at the same rate	1
Revising postsecondary curricula	1
Lack of truly integrated curriculum	1
Conflicts with reform movements to downsize educational system	1
Selling school superintendents on Tech Prep	1
Identifying and paying for necessary curriculum reform	1
Resistance of vocational educators to change	1
Resistance of secondary schools to replacing general track	1
Time needed to get input and and approval from stakeholders for implementation	1

When asked a similar question about major success in the Tech Prep effort, respondents also provided a variety of answers (Table 9). It is interesting to note that some states have had great success in overcoming one of the commonly mentioned barriers: getting secondary

Continued on next page

Barriers and successes (continued)

and postsecondary educators together. This would tend to support the notion that such barriers may be the beginnings of success. If the level of enthusiasm for Tech Prep can be maintained or increased, it is likely that other major barriers can also be overcome.

Table 9
Distribution of states by successes in implementing Tech Prep

Success	Frequency
High level of enthusiasm for Tech Prep	9
Collaboration between secondary and postsecondary educators	9
Involvement of entire state and access to Tech Prep programs	7
Increased awareness of Tech Prep in educational community and the public	4
Progress of Tech Prep program statewide	4
Integration of vocational and academic education	2
Development of articulation agreements	2
High degree of involvement in the state	1
Collaboration of Tech Prep coordinators	1
Encouraging and obtaining a variety of approaches	1
Worksite learning projects	1
Integrating Tech Prep into larger reform efforts	1
Business and industry involvement	1
Overcoming fear of change	1
Acceptance of applied learning	1
Distributing funds to all projects	1
Acquiring administrative support	1
Building networks within the state	1
Establishing and adopting Tech Prep guidelines	1
Collaboration of vocational and academic educators	1
Applying the TQM approach to implementation	1

Conclusions and Recommendations

Implications

With 864 consortia spreading Tech Prep throughout the country and the movement in its second year, a major educational reform effort has been set in motion. Whether it will ultimately succeed or fail depends on the degree to which current problems are solved and surmounted. This study has several implications for policymakers and education leaders whose job it will be to implement Tech Prep.

Resources

One of the more commonly perceived barriers to the implementation of Tech Prep was a lack of resources: time, staff, and money. Only twenty-one percent of the states were contributing funds for Tech Prep in addition to the federal dollars provided, bringing into question who will take over funding if federal funding ends. States must provide concrete leadership and support for their Tech Prep programs in order for them to succeed at the local level. No matter how much excellent work is done by local consortia, without support from the state level, it will have been in vain.

Philosophy

At a recent conference on Tech Prep, a national leader chairing a discussion on defining Tech Prep, said that the definition of Tech Prep changes every six months because people are fleshing out a skeletal federal program and making it their own. In the implementation process, such changes are bound to happen. Tech Prep is evolving, not yet in final form. But indications are that around the country a potential impediment to Tech Prep is its lack of a clear identity. Is it vocational education by another name? Is it an attempt to reform vocational education? Or is it a total education reform movement? Such questions, in addition to being raised on their own, may also be at the heart of other problems such as turf battles between secondary and postsecondary educators, failures in collaboration between academic and vocational educators, difficulties getting credit approval from other higher education institutions for applied academics courses, and the lack of resources allocated to states' Tech Prep initiatives. Granted, these problems may also be political in origin, but the politics are likely to be based on philosophical differences. It should be a major goal of leaders at all levels to firm up goals for Tech Prep, not to the point of stagnation or fossilization, but so that its uniqueness and importance is clearly visible.

Continued on next page

Conclusions and Recommendations, continued

Evaluation

In a systems approach to education, feedback is the vitally important component that completes the loop, leads to the improvement of processes, and produces higher quality outputs. Evaluation is, at present, the acknowledged weak link in Tech Prep. Since fewer than forty percent of the states have established outcomes at the state level, a major concern for leaders at all levels should be the identification of expected outcomes and evaluation procedures. The increased national focus on accountability in education guarantees that Tech Prep will be critically analyzed and measured in terms of costs and benefits. Evaluation must be used to provide data to improve Tech Prep and demonstrate its viability and value.

The community college role

Finally, in regard to benefits and value, it must be noted that with 864 consortia working to make Tech Prep a reality, it appears that three-quarters of the country's public two-year postsecondary institutions are involved. When the first cohort of Tech Prep students graduates from high school, these institutions stand to gain a better prepared group of students motivated to acquire associate degrees. Indications are that major efforts in curriculum integration, collaboration, and restructuring are taking place at the secondary level to ensure these students are better prepared for the postsecondary level.

Many two-year postsecondary institutions are playing a vital role in providing leadership and resources to their local consortia. But it seems clear that, for Tech Prep to succeed in the long run, they must do more. Two-year colleges must take a proactive role in developing and implementing curricula that demonstrate the integration of vocational and academic education; secondary students who are successful in this environment are bound to demand it at the college level as well. They must also aggressively pursue the development of curricula that provide advanced academic and technical skills needed by the workforce. Clearly, the role of two-year postsecondary schools is vitally important to implement needed changes in our entire educational system, as was envisioned by the founders of Tech Prep.

References

Deming, W.E. (1986). *Out of the crisis*. Cambridge, MA: Massachusetts Institute of Technology.

Chapter 5

Planning & Implementation of Tech Prep by Local Consortia

Debra D. Bragg

Overview

Background

A research study was conducted by the National Center for Research in Vocational Education (NCRVE) to describe how individuals and organizations were beginning to plan and implement Tech Prep. Field visits were made to two consortia in four states to collect in-depth information about these processes. The objectives of the study were to

- describe the planning and implementation processes used by states and local Tech Prep consortia.
- examine the context in which planning and implementation processes are being carried out.
- identify individual perceptions of barriers to implementation of Tech Prep and strategies viewed as successful in overcoming barriers.

Based on the field research, a baseline of knowledge about Tech Prep planning and implementation was created, providing useful information for evaluating later process and outcomes.

In this chapter

This chapter provides a discussion of findings from field research regarding local planning and implementation of Tech Prep.

This chapter covers the following topics:

Topic	See Page
Field Research	5-2
Local Planning and Implementation Processes	5-6
Definition and Strategy Setting	5-7
Consensus Building	5-8
Selection and Orientation of Planners	5-9
Consortium-level Planning	5-11
Wide-scale Orientation and Recruitment	5-13
Initial Implementation	5-14
Implementation Issues	5-15
References	5-20

Data collection

If findings reported in Chapter 4 on how states are implementing Tech Prep can be considered the macro view of Tech Prep implementation, then observations in this chapter represent the micro view. Consistent with the goal of understanding the Tech Prep planning and implementation process, a total of eight consortia located in four states were selected for in-depth study. They were

- Lake Land College and Eastern Illinois Education for Employment System Consortium in Illinois
- Rock Valley College and Career Education Associates of North Central Illinois Consortium in Illinois
- Catawba County Schools and Catawba Valley Community College in North Carolina
- Cumberland County Schools and Fayetteville Technical Community College in North Carolina
- Chemeketa Community College and Marion Polk Yamhill Counties Consortium in Oregon
- Clackamas Educational Services District and Clackamas Community College Consortium in Oregon
- Golden Crescent Consortium in Texas
- Upper Rio Grande Tech Prep Consortium in Texas

These local consortia were selected through a nomination process involving experts who were knowledgeable about Tech Prep initiatives across the nation. Based on a set of criteria and rating procedure, project staff identified the four states of Illinois, North Carolina, Oregon, and Texas from a master list of twenty-two first identified by the panel of experts. These four states showed evidence of

- leader commitment to and enthusiasm for Tech Prep revealed through established policies and actions.
- historical involvement with curriculum articulation and/or integration initiatives.
- active involvement by multiple stakeholder groups in the initial planning and implementation.
- active involvement by multiple levels of the educational systems, at least by secondary and postsecondary education.
- innovative planning processes in the areas of inter-organizational communication; staff development; marketing; business, industry, and labor involvement; university involvement; or community involvement.

Continued on next page

Field Research, continued

Data collection (continued)

The final selection of two local consortia within each of the four states was conducted in conjunction with state agency staff. Local sites that were selected represented an urban and rural area; they also represented a planning and implementation consortium for each state.

Characteristics of research sites

Local consortia selected for the field research can be characterized in terms of the curriculum focus, funding levels, and organizational composition. Sites selected for the study were involved in curriculum development in several different areas: one site was using the business and management area; two sites were targeting manufacturing technologies; three sites had selected three or four vocational areas (e.g., electrical/industrial technology, computer information science, and criminal justice); and two sites were involving most of their existing vocational education curricula.

Funding for the eight consortia varied; those involved in planning ranged from approximately $25,000 to $50,000, and those involved in implementation ranged from approximately $50,000 to $200,000. The consortia varied in size and composition rather dramatically as well. At one extreme, a consortia was composed of one community college and one county school district with five high schools; at the other extreme, a consortia included one community college, twenty-two school districts, and a regional vocational education system.

Continued on next page

On-site data collection

In total, over three-hundred-sixty person hours were accumulated in on-site data collection from January to June 1992. Naturalistic inquiry methods were used to create understanding of the implementation processes and contextual factors influencing them. On-site data collection focused on the following themes:

Major Themes	Subthemes
Planning to Plan	Gaining leader commitment Developing a philosophy Forming consortia/teams Using team/group processes
Formulating Overall Goals	Setting short-term goals Determining long-term goals
Forecasting Labor Market and Educational Needs	Determining employment trends Identifying future opportunities Prioritizing program areas Identifying obstacles to goals Making 3, 5, and 10-year forecasts
Matching Goals with Outcomes	Prioritizing goals and outcomes Determining measures for outcomes
Developing Key Components	Providing staff development Developing articulation agreements Developing curriculum integration Identifying guidance/counseling role Marketing/recruitment Collaborating with b/i/l Collaborating with others (e.g., 4-year college)
Implementing Tech Prep	Enrolling students Anticipating barriers Identifying solutions Making adjustments/changes
Evaluating the Initiative	Assessing processes Assessing outcomes
Revising/Improving the Initiative	Reviewing planning strategies Making improvements

Continued on next page

On-site data collection (continued)

For each of these themes, field researchers focused on understanding the following:

- Who was responsible for the activity? Who was involved?
- What roles and responsibilities were carried out? What resources were required?
- When was the activity initiated? Completed?
- What methods and strategies were employed to carry out the activity?
- Why was the activity undertaken?

Individuals interviewed in each consortia included the following groups:

- Local consortia leaders
- Faculty, counselors, and other school or college support staff
- Students

Local Planning & Implementation Processes

Individualized planning and implementation strategies

Planning and implementation strategies observed in the eight local consortia were highly individualized and reflective of the unique characteristics of their communities, institutions, personnel, and stakeholders. Individuals interviewed quickly pointed out how federal and state definitions and guidelines for Tech Prep did or did not fit their local situations. Leaders of local consortia usually began explaining the purpose of their Tech Prep initiative by saying "In our school, Tech Prep means" or "We're a little different from the rest, we think about Tech Prep as..." Indeed, the general purpose of Tech Prep for the eight local consortia varied significantly.

Often consortia leaders saw the concepts of articulation and applied academics as central to their efforts. Beyond that, individual consortia goals were often quite unique. For example, one consortia identified its purpose as primarily to provide students with an alternative pathway to high school graduation. This purpose contrasted with another consortia's primary goal of creating a pathway to upper-division postsecondary study. Two other consortia described their Tech Prep initiatives as involving work-based learning and youth apprenticeship while two others were located in a right-to-work state that has been slow to consider such options.

Patterns of planning and implementation

Given this basic level of understanding about perspectives shared by local leaders, general observations can be made about patterns of planning and implementation for Tech Prep. That pattern is not linear or fixed, although there seems to be a relative sequencing of activities beginning with goal setting, continuing with planning within and across institutions, and eventually reaching implementation. This sequencing of planning and implementation activities follows:

- definition and strategy setting
- consensus building
- selection and orientation of planners
- consortium-level planning
- wide-scale orientation and recruitment
- initial implementation

Each of these activities is described in the next section of this chapter.

Definition and Strategy Setting

Planning began with the grant

The planning process for Tech Prep typically began when a local consortium was notified that it had been awarded a Tech Prep grant. This was the time when local leaders began searching for a guiding philosophy or "vision" for the initiative. This activity usually entailed formal as well as informal efforts to develop goals, establish definitions, and identify components.

Often initiated by the individual or small group responsible for writing and managing the grant, this conceptualization phase began somewhat in isolation but usually spread out to involve the following types of groups: school and college executives, faculty, employers, and advisory committee members. Typically, early ideas were tested out with trusted colleagues and then shared with a broader audience once there was at least a minimal level of comfort with the initial framework created for the planning process.

Timing related to state activities

The time for creation of a guiding philosophy and vision was partially dependent upon the local context and expectations established by state agencies (i.e., the time frame for states to fund planning varied from six months to more than one year). For example, in Oregon where massive educational reform was recently legislated, local consortia were cautious about launching into a direction that would not be consistent with the state's perspective. Consequently, the initial definition and strategy-setting activity was extensive, taking much of the entire first year of the grant. In other states, where development of philosophy was advocated primarily at the local level, as it was in Illinois, less time was taken for this initial phase of planning. However, for all sites, this phase of the project required substantial time and energy from project leaders.

On average, considering all eight consortia, four to six months was typical for focusing on this definition and strategy-setting activity. According to all local leaders interviewed for this research, refocusing was expected to continue throughout implementation as ideas were tested and refined. The notion of continuous implementation, tied to continuous improvement, was shared by the majority of the project leaders.

Consensus Building

Sharing goals with others

Once the concept of Tech Prep began to crystallize for local leaders, there was an attempt to share its goals and purposes with others and gain commitments from people to be involved in planning. Local consortium leaders were mid-level school or college vocational administrators and often limited in their contact with academic educators or guidance counselors. Therefore, concerted efforts had to be undertaken by local leaders to inform a broad base of people about Tech Prep.

Presentations on Tech Prep given to leaders

Often, at this stage, numerous presentations were given by local leaders to executive-level leaders and boards of schools, colleges, businesses, and the community to create awareness about Tech Prep. Participation in these meetings was also seen as an effective means of obtaining information about how Tech Prep was being viewed. Some local leaders described several iterations occurring with top leaders before there was a general level of understanding about the goals of and processes associated with Tech Prep.

Creating awareness about planning

Close behind or along with this activity came efforts to create awareness and gain commitments for participation in planning from faculty, counselors, employers, and others, especially for those who would later play a role in implementing curriculum. Similarly to meetings with top leaders, these groups were informed about Tech Prep and queried for their opinions about it. This input was useful in further refining a vision of Tech Prep that would reflect grassroots-level requirements for implementation.

Selection and Orientation of Planners

Selection of project leaders

Typically, only a few individuals were involved in the day-to-day management of a Tech Prep initiative. Major commitments of time and energy to planning were gained from project leaders and their assistants, often known as project coordinators. In one-half of the sites, projects operated with a full-time coordinator funded with the Perkins II grant who, among other duties, maintained the flow of information and activities across the consortium. In the remaining sites, this activity was painstakingly carried out on a part-time basis, typically by a local vocational education administrator who saw Tech Prep as only one of his or her many responsibilities.

Of course, in cases where a project coordinator was employed, his or her job was not seen as carrying out Tech Prep in isolation. Rather, in all cases, local consortia leaders were encouraging the participation of many groups. Usually faculty, counselors, employers, employees, and others were identified to actively plan the Tech Prep initiative, including the development of curriculum materials for it.

Skills and knowledge of local leaders

What skills and knowledge are required to direct a Tech Prep initiative? Nearly all Tech Prep planners and local leaders involved in our research thought that skills and knowledge in project management were critical to the success of Tech Prep. They described the importance of being able to organize and coordinate meetings; select, orient and supervise staff; give presentations; link people with information and resources; and conduct follow-up visits.

In addition, those interviewed also explained that expertise in the field of education—not necessarily vocational education—was important to doing a thorough job as a project leader, especially because of the breadth of involvement across levels of the educational systems and across academic and technical disciplines.

Those individuals interviewed described the importance of local leaders having experience in handling broad and diverse education-related issues. It is important to note, however, that our research has identified consortia that are employing project leaders from business and industry and these individuals are being viewed very positively. Clearly, more research is needed to determine the qualifications necessary to guide Tech Prep throughout the planning and implementation process.

Continued on next page

Selection and Orientation of Planners, continued

Selection of planners

How were individuals selected to be part of planning and implementation processes? Typically, the following two approaches were used:

- Invitations were extended to individuals thought to be innovators by school, college, and business leaders.
- Volunteers were sought once the initiative was communicated to a wide array of individuals in the partnering institutions.

In either case, these individuals were thought to be capable of spearheading Tech Prep's local implementation. When starting the job, typically these individuals were provided with information (often quite limited) about Tech Prep, a copy of the request for proposals (if they were not involved in its writing), and a sketchy statement of the goals of the local Perkins-funded project. Subsequently, some consortia offered a series of staff development activities on such topics as teamwork, articulation, and integration to enhance the ability of planners to contribute to the implementation process.

Professional development of planners

Unique among the eight consortia studied, the Rock Valley College and Career Education Associates of North Central Illinois (CEANCI) Consortium in Rockford, Illinois anticipated and facilitated planners' needs to learn about and engage in Tech Prep interactively by structuring professional development as central to the entire implementation process. In that site, it was difficult to differentiate planning from staff development or from curriculum development. Yet, there was a sense of involvement and accomplishment that seemed to move the implementation along in a coordinated and energetic fashion. Later, parts of this professional development model were imployed by the Upper Rio Grande Tech Prep Consortium in El Paso, Texas. Of course, more research is needed to determine how this approach influences the eventual effectiveness of Tech Prep implementation.

Consortium-level Planning

Organization of planning teams

During or following the orientation phase, individuals were organized into planning teams by site (e.g., schools and colleges) and/or by functional area (e.g., curriculum, evaluation, marketing). These teams may have had an individual designated or elected as team leader, especially when they functioned in a particular site. Once these teams were identified and charged with a particular planning task, they became very involved in Tech Prep.

Often planning efforts at this stage took place on a fairly regular basis, sometimes with only a single site-based team interacting or during large consortium-wide events to facilitate cross-site communication. For example, several consortia involved representatives from schools and colleges even beyond the consortium partners (e.g., junior high schools, four-year colleges and universities), to facilitate communication and planning. It was through these team interactions that an environment conducive to implementation of Tech Prep seemed to be created. This environment was one facilitative of dialogue among teachers and administrators within and across institutions to generate new ideas and reach common understanding about Tech Prep.

Curriculum alignment

There were a number of activities that occurred as a part of coordinated consortium-wide planning. Usually early in the academic year consortia addressed the problem of curriculum alignment across levels of education. The two sites in North Carolina used a highly organized and productive process for reviewing and aligning curriculum, which provided a framework for building Tech Prep curriculum. From this type of activity, all consortia began developing basic programs of study to get courses into time tables and information to counselors for scheduling purposes. Sometimes this activity was completed as early as November for a subsequent academic year, thereby necessitating the rapid formation of articulation agreements and course sequences. Whenever completed, this information was translated into information needed by guidance counselors, students, and parents for course decision making.

Continued on next page

Curriculum review

Another important activity that occurred fairly quickly once planning teams were formed involved reviewing existing technical and academic curricula at the secondary and postsecondary levels. In all sites, a conclusion was reached by review teams that the emphasis would need to be more on modifying existing courses than on developing new ones because of limited resources. To that end, all eight sites had investigated off-the-shelf applied academic courses developed by the Center for Occupational Research and Development (CORD).

While none of the leaders of the eight sites thought that these courses provided the entire foundation for Tech Prep, five of the eight did proceed to a try-out phase with them. Varying levels of sophistication (e.g., from review to field tests) were described by local leaders in involving faculty in using applied academic materials or incorporating portions of these curricula into existing academic or technical courses. Of the eight sites, three decided to not incorporate these curriculum materials into their Tech Prep initiatives during the time period of our research, usually citing cost as the prohibitive factor.

Other curriculum approaches

Several faculty interviewed as part of our study described an interest in exploring other academic and technical integration models besides the applied academic approach. For example, team teaching, block scheduling, coordinated assignments and projects, and school-within-a-school were approaches being considered in some of the eight consortia. Possibly, because of having experience with applied academic curriculum, faculty were prepared to examine other approaches to integration.

Beyond the integration component of curriculum, individuals and teams at a few of the sites were concerned about updating vocational-technical curriculum at either the secondary or postsecondary level. The Golden Crescent Consortium in Victoria, Texas was particularly active in developing an "advanced skills" component to extend its postsecondary technical curriculum beyond the existing associate-degree level. However, in most sites, less attention was being paid to postsecondary curriculum because, according to those interviewed, the pressing need for curriculum change was at the secondary level.

Wide-scale Orientation and Recruitment

Widening the circle of stakeholders

Once a baseline of understanding was obtained about Tech Prep and key components such as curriculum were being planned and tested, an attempt was made to create awareness about Tech Prep with a larger circle of stakeholders. Often Tech Prep consortium leaders and planners—rather than administrators who might be perceived to be removed from direct implementation of Tech Prep at the classroom level—were involved in delivering information about Tech Prep (i.e., its goals, processes, outcomes).

Through several channels, students, parents, community leaders, and the general public were informed about Tech Prep. Some of the approaches used by local consortia included organizing a speaker's bureau; developing videos, brochures and other marketing tools; and involving local planners in sharing information with peers in education and business settings. These efforts seemed to help peak awareness about the initiative and create opportunities to get others involved in it.

Initial Implementation

Accomplishments by the end of the planning phase

By the end of the planning phase—often the end of a first-year funding cycle—sites sought to accomplish the following:

- have partnering organizations committed
- have broad representation of stakeholder groups involved in planning curriculum and marketing programs
- involve more educators, employers, students, parents, and members of the general public in the initiative

During initial implementation, the focus was placed even more directly on counseling and enrolling students, strengthening both academic and technical curriculum areas, involving more partnering institutions and employers, and improving the planning and implementation approach by learning from past experiences and moving into more sophisticated curriculum and evaluation arenas. By enhancing the interdependence among people and partnering institutions, the importance of the initiative was reinforced and the level of commitment to implementation was heightened.

Continual questioning and learning by doing

Throughout the entire planning and implementation process, there was continual questioning about what was being accomplished, whether and how the initiative could be structured, who should be identified as the target group of students, and how success could be measured. In other words, the definition and strategy-setting search that began these efforts seemed to be continual. A learning-by-doing approach appeared to be occurring and actually seemed to be instrumental in helping individuals become more knowledgeable about, committed to, and creative in planning and implementing Tech Prep. This notion of learning from the change process was described by Fullan (1991) as important to ensuring successful implementation.

Summary

While many facets of Tech Prep could and should be explored in the future as the initiative matures, this rough sequence of activities represents a general implementation pattern observed in the eight consortia. Certainly efforts to document Tech Prep planning and implementation should continue at the local, state, and federal level. Clearly, many factors influence how the process occurs in these sites, and our research has attempted to focus on initial understanding of that process.

Implementation Issues

Background

An important focus of our study was on understanding issues that surround Tech Prep planning and implementation. A number of issues (sometimes described by local planners as barriers) were identified through our field research. The eight issues addressed here focus on purposes and processes associated with Tech Prep. They are

- Clarity of purpose.
- Tracking within high school curriculum.
- Vocational education control of administration and funding.
- Resource needs.
- Leadership development.
- Flexibility in implementation and evaluation.
- Establishment of meaningful partnerships.
- Maintenance of momentum.

Clarity of purpose

Clarity of purpose is critical to the success of any educational innovation (Fullan, 1991). Local consortium leaders interviewed described the need to arrive at consensus about

- the purpose of Tech Prep.
- who should participate.
- what should be accomplished.
- what the components should be.
- how implementation should be conducted.

According to one state director of vocational education, too often Tech Prep is being defined by what activities are being undertaken rather than a well-articulated statement of its purpose and goals. Without a clear vision, there is concern that Tech Prep will not gain the momentum and acceptance needed for it to be adopted fully.

Continued on next page

Tracking within high school curriculum

Tracking within high school curricula is viewed as detrimental to providing a well-rounded, challenging education for many students, particularly students who are counseled into general or vocational tracks (Oakes, 1992). Whereas earlier thinking of Parnell (1985) focused on Tech Prep as a replacement for the general education track, actual implementation to any one track within high school curricula seems varied.

In some sites, Tech Prep is viewed as a replacement for general education, as Parnell first suggested, resulting in only a slightly different three-track approach of college prep, Tech Prep, and vocational education. In other sites, Tech Prep is being adopted as the only alternative to college prep, thereby creating a dual track system. In these sites, the general and vocational tracks appear to be subsumed by Tech Prep.

In still other sites, Tech Prep appears to be providing a means of reformulating curriculum to move away from tracking, with the intent being to increase options for advanced education or employment for larger numbers of students. In these sites, the goal has been to eliminate tracks and create options for the majority of students to move in and out of college prep, Tech Prep, and vocational courses by requiring all students to complete basic academic requirements for college. Often these schools are organized around problems, themes, or career cluster areas that cut across the entire high school curriculum. The question remains as to whether any or all of these approaches will result in a more relevant and rigorous educational pathway that yields opportunities for upward mobility. Rigorous evaluation and research is needed to address this question.

Continued on next page

Vocational education control of administration and funding

In many states, control of Tech Prep funding and administration primarily rests within traditional state and local vocational education agencies, possibly to the detriment of the initiative in the long term. Many local consortia leaders and planners, including those who were involved primarily with vocational education, felt problems would occur if Tech Prep was isolated from the entire educational enterprise and viewed as another vocational education program. Individuals at both the state and local levels noted the contradiction in framing Tech Prep from a broad educational reform perspective while still maintaining funding and control in the vocational education arena. Many were concerned that a truly integrated approach to curriculum could not be obtained by using only federal vocational education funding and by having only vocational educators in charge. Release of general education federal or state funds for Tech Prep could create a fairer and more realistic environment for implementation of the integration concept called for in the Perkins II legislation, according to several individuals.

Since Tech Prep is a latecomer to the educational reform parade, it is important that it be recognized as an approach that blends both vocational and academic education in order to obtain wide-spread support. Depending upon the state and locality, heavy investments may have already been made in alternative approaches to reform, creating difficulties with funding and implementing Tech Prep on a state or local level. However, this situation may actually be advantageous if Tech Prep can build on existing planning structures. While not always the case, building upon other reform processes may enhance Tech Prep implementation, if timing and careful planning are considered.

Resource needs

Resources in terms of dollars, people, curricular materials, facilities, and technological innovations are critically needed to make Tech Prep successful. Financial resources provided by the federal Tech Prep Education Act provide the seed money to initiate Tech Prep, however these monies cannot be expected to sustain it. They also appear to be distributed somewhat unevenly, especially across local sites within some states. Additionally, several states—particularly those with large rural areas or urban centers—view their federal funding to be too limited. If Tech Prep is to be successful, additional resources are needed to ensure that widespread adoption can occur. These funds are particularly critical for areas that traditionally have difficulty making educational innovations work.

Continued on next page

Implementation Issues, continued

Leadership development

Leadership at all levels of the educational system is needed to ensure Tech Prep is implemented successfully. It is essential to ensuring that people can plan, implement, and evaluate Tech Prep. Although it seems that a sizeable proportion of federal funds are being used for leadership development at the local level, it appears that even more emphasis on development of personnel is needed.

Leadership development can address many needs for Tech Prep. These are to

- create awareness and enthusiasm.
- help people deal with change.
- provide skills and knowledge to help people participate.
- provide a mechanism for communication.
- update technical, pedagogical, and managerial skills and knowledge.
- provide organizational development skills and knowledge.

Flexibility in implementation and evaluation

A perspective shared by the vast majority of personnel representing state agencies interviewed for our study was to maximize the amount of flexibility that could be provided local consortia during implementation. Under that directive, state agencies appeared to be providing minimal definitions, goals, or expected outcomes. While this strategy may prove to be successful in the long run because of its potential for stimulating local models, there is also a risk that in the short run it will result in "business as usual."

With this approach, the burden of establishing goals and parameters for implementation is placed primarily on the local level. State agencies taking this posture are encouraged to reinforce local initiatives with technical assistance and leadership development to help identify and redirect problems that arise during implementation. Furthermore, the need for evaluation conducted through a partnership between state agencies and local consortia is heightened. Currently, all eight local consortia involved in our research are struggling with evaluation. Clearly, a critical need for evaluation exists and must be met through the collaborative efforts of all Tech Prep stakeholders.

Continued on next page

Establishment of meaningful partnerships

Partnerships are a necessity for full implementation of Tech Prep, according to the federal legislation. Depending upon past and current relationships, some local consortia seemed to be struggling with establishing fair and meaningful partnerships among

- the levels of education (i.e., high school and 2-year college, or 2-year college and 4-year college),
- vocational and academic education faculties, and
- education and business, industry, and labor constituencies.

For example, sometimes business and industry or postsecondary education was viewed as trying to exert too much control over curriculum. In other cases, either vocational or academic education was seen as too aggressive in establishing the newly-articulated Tech Prep curriculum. Without meaningful partnerships, individuals interviewed felt it would be difficult to establish the concept of shared ownership needed to make Tech Prep effective. Both state and local educational agencies seemed to be learning under fire about what could influence the success and failure of these new partnerships.

Maintenance of momentum

Momentum must be sustained over a number of years to ensure full implementation of an innovation as wide-scale and comprehensive as Tech Prep. Problems created by turnover of leadership can seriously deter institutionalization of Tech Prep. Fullan (1991) described the timeframe required for implementation of educational innovations within an organization as being at least five years. It seems reasonable to expect implementation of Tech Prep to take even longer due to the involvement of many educational organizations and partnerships. Planning must be conducted at a pace that can sustain implementation throughout the decade, if Tech Prep is to be fully adapted.

References

Fullan, M. (1991). *The new meaning of educational change* (2nd ed.). New York, NY: Teachers College Press.

Oakes, J. (1992). Can tracking research inform? Technical, normative, and political considerations. *Educational Researcher, 21*(4), 12-21.

Parnell, D. (1985). *The neglected majority*. Washington, DC: Community College Press.

Chapter 6

Total Quality Management: A New Approach for Tech Prep

Catherine L. Kirby and Debra D. Bragg

Overview

Background

Tech Prep is intended to prepare a workforce for the United States that is not only competitive with world class standards, but second to none. Competition on that level requires ongoing improvement of America's educational and economic systems as technology and production advance. Harnessing the process of educating tomorrow's workforce to meet world class standards is an enormous challenge to educators and employers. A potential approach to accomplishing quality-improvement goals for both systems is total quality management (TQM).

Parallels between TQM and Tech Prep

There are many parallels between TQM and Tech Prep. Both are focused on

- reforming and improving systems,
- empowering teams representing a variety of stakeholders to make improvements, and
- using measurements as the basis for all continuous quality improvement efforts.

This chapter explores TQM principles, quality theorists, and implications of TQM for Tech Prep implementation.

In this chapter

The following topics are covered in this chapter:

Topic	See Page
Quality: Advice from Business to Education	6-2
Quality Management Theorists	6-4
A Natural Match—TQM and Tech Prep Planning	6-10
Leadership from Executive Staff	6-13
A Quality Vision and Policies	6-17
Broad Quality Goals	6-20
Deployment of Goals to All Levels of the Organization	6-22
Provision of Resources, Including Training	6-25
Measurement	6-28
Performance Review	6-30
Reward Systems for Quality Improvement	6-31
Challenges in Applying TQM to Tech Prep	6-33
References	6-35

Quality: Advice from Business to Education

Background

Total quality management (TQM), quality assurance, total quality control, quality improvement, or simply quality, are all terms that reflect contemporary business management practices. A simple definition of TQM is "the unyielding and continually improving effort by everyone in an organization to understand, meet and exceed the expectations of customers" (Procter & Gamble, 1989, p. 1).

While educators traditionally do not think of their schools as businesses, nor their students as customers, there is a correlation between providing a service, as educators do and producing a product, as manufacturers do. At the most basic level, similarity lies in the fact that the end product in both situations has been achieved as a result of complex processes involving people. It is the act of managing these complicated human processes that is the focus of TQM.

Motorola's concept of quality in education

Familiarizing oneself with quality terminology is important to understanding how to apply quality methodology to educational settings. Motorola, 1988 winner of the Malcom Baldridge National Quality Award, offers the following conceptualization of quality:

1. Every organization exists TO DO
2. What it does is its OUTPUT (products and/or services)
3. For whom it does is its CUSTOMER
4. In order to do, it has NEEDS
5. Who fills those needs are its SUPPLIERS
6. One organization's NEED is another's DO
7. Every DO/NEED pair is an INTERACTION
8. Every educational process is a CHAIN of INTERACTIONS (Bales, 1992).

The success of any new educational initiative such as Tech Prep depends on the design and maintenance of interactions between educational systems, businesses, and the processes within and between those institutions. While the business community has led the way in applying the quality approach, they do not hold the patent on the process. Tech Prep may represent one introductory pathway to implementation of TQM strategies in education.

Continued on next page

Advice to educators

Faced with increasing competition for shrinking numbers of students during an era of diminished budgets, some educational institutions are beginning to recognize the benefits of TQM. Increasingly, postsecondary institutions are using TQM for administrative purposes as well as offering quality-related courses (Axland, 1991). Although slower to embrace TQM, many secondary institutions are implementing practices that parallel TQM principles such as "participatory management, shared decision-making, site-based management, and outcomes-based education" (Axland, 1991, p. 62).

Questions arise as to the adaptability of methods created for the manufacturing industry to the less predictable process of education. Educators who are implementing TQM have some advice for others who are beginning with this implementation. Coate (1990) summarized one institution's TQM approach in an educational setting with this advice:

- Support from leadership is essential.
- Enlist a champion for the cause who will see it through the difficult trials of increased workload and cost.
- Learn by doing. Implement TQM as soon as leadership is familiar with the steps.
- Teams are the essence of TQM.
- Training is necessary to ensure solutions are implemented.
- The service side is an easier place to start than the academic side.
- Early success is necessary to get momentum going.

These words of advice seem appropriate for Tech Prep implementation as well.

Quality Management Theorists

Background

The quality movement in education is growing (Brandt, 1992) and many businesses are assisting education in the effort. They are sharing their views about the educational needs of the workforce and their experience with applying quality processes. A brief historical perspective of three leading quality theorists reveals the potential TQM offers to education. While differing in approaches, W. Edwards Deming (1986), Joseph M. Juran (1989), and Philip B. Crosby (1985) are united in their emphasis on education to achieve the elusive standard of quality.

Japan's experience

Japan's application of TQM has been credited with a dramatic shift in the meaning of "made in Japan." Today, American consumers recognize many Japanese manufactured goods as having world-class quality as is evidenced by the current trade deficit. It is ironic that it was two American exports, a professor named W. Edwards Deming and an engineer and lawyer, Joseph M. Juran, who inspired post-WWII Japan to adopt the quality methodology.

W. Edwards Deming

Recruited by General Douglas MacArthur from the Department of War where he was employed as a statistician, Deming went to Japan to conduct a census and assess the needs of the country following WWII (Aguayo, 1990; Gabor, 1990).

The Japanese not only listened to Deming's teachings—the importance of market research, the need to control variation in all processes, and the importance of working closely with suppliers—but were struck by his sensitivity to the unique needs of the culture of their country (Gabor, 1990).

Recognizing the contribution he made to the reconstruction of their economy, the Japanese created the Deming Application Prize in 1951, an annual award given to companies demonstrating outstanding performance in quality strategy, management, and execution.

Ford company's experience

It was not until thirty years later that an American company, Ford, asked Deming for help. To the surprise of Ford executives at the initial meeting, Deming only touched on the importance of statistical theory and reject rates on the production line; instead he wanted to know about how people and processes were managed.

Continued on next page

Quality Management Theorists, continued

Ford company's (continued)

Ford took Deming's philosophy seriously and made a commitment to quality, as is evident in its slogan, "Quality is Job One." Management restructured the organization, focused on customer needs, empowered its engineers and line workers with decision making, and as a result created an award-winning model, the Taurus.

Joseph M. Juran

Juran's contributions to quality also began in the 1950s and were sought by Japanese scientists and engineers. A recipient of over thirty awards of service for improving quality, Juran has been contributing prominently in conceptualizing management's role in quality processes. According to Juran, upper management must lead the company through major breaks from tradition including

- "annual improvement in quality, year after year, forever;
- 'hands-on' leadership by upper management to establish new policies, goals, plans, organizational measures and controls throughout the company;
- massive training in quality for the entire management team, not just the quality department" (Cited in Bryce, 1991, p. 17).

Juran's definition of quality is "fitness for use" and has two major components. These components are that a product

- has features that meet customer needs and
- is free from deficiencies (Juran, 1989).

Internal and external customers

He reminds us that every product or service has

- internal customers—those who are affected by the product and are members of the company that produce the product.
- external customers—those who are affected by the product but are not members of the company.

Juran (1989) comments on how Americans failed to notice the trend of improving Japanese quality and wrongly believed that increasing competition from Japanese products was due to pricing. By the 1980s it was evident that quality, not price, was the commodity Americans were willing to pay for.

Continued on next page

Quality Management Theorists, continued

The Juran trilogy

Juran advocates a process for managing quality that has come to be known as The Juran Trilogy® and entails the following:

Managerial processes	Activities
Quality planning	Developing products and services to meet customer needs
Quality control	Evaluating performance against quality goals and closing gaps
Quality improvement	Raising performance to higher levels

Steps involved in all three stages are systematic, focus on customer needs, and result in raising performance to breakthrough levels (Juran, 1989).

Philip B. Crosby

Credited with advocating a more top-down approach than Deming and Juran, Crosby is recognized here as a third leading quality "guru". Based on his extensive experience beginning as a line inspector for ITT and advancing to vice president for worldwide quality operations, Crosby defines quality as conformance to requirements. He has established following four absolutes of quality management:

1. Quality is conformance to requirements.
2. The system of quality is prevention.
3. The performance standard is zero defects.
4. The measurement of quality is the price of non-conformance (Crosby, 1985).

Cost of quality

Cost of quality is a favorite Crosby theme. The title of a 1979 publication, *Quality is Free*, has a deeper meaning than the title might first suggest. Crosby recognizes that any quality management effort consumes resources from many areas, including time and direct expenditures. However, he contends that these quality efforts more than pay for themselves in the long run.

Continued on next page

Symptoms of problem organizations

Crosby describes problem organizations in *Quality without Tears* (1985). He indicates that these organizations have the following five symptoms:

1. The problem deviates from expected requirements.
2. The company has an extensive network of corrective actions to keep the customer satisfied.
3. Employees develop individual performance standards because management doesn't provide them.
4. Management doesn't know the cost of poor quality (i.e., non-conformance).
5. Management denies it is the cause of the problem.

Crosby's definition of quality

Crosby says quality is not

- goodness, or luxury, or shininess.
- intangible, therefore not measurable.
- unaffordable.
- originated by the workers.
- something that originates in the "quality department" (Hunt, 1992, p. 52).

But, quality is conformance to requirements; non-quality is non-conformance.

Deming's fourteen points

Deming and Juran's early track record attracted many followers both in Japan and later in the United States. Crosby and others in business and industry as well as government have added to America's quest for quality. While subtle differences exist between leading theorists, common threads are evident in the fabric of all quality improvement processes.

Believing that quality is controlled by the elimination of inconsistencies in the delicate interaction of people, machines, materials, and the environment, Deming developed a system based on fourteen points, which he continues to revise as his theories evolve (Gabor, 1990). Deming's current vision of a quality environment is expressed in his fourteen points (Deming, 1986).

Continued on next page

Quality Management Theorists, continued

Deming's fourteen points (continued)

Point	Concept
1	Create consistency of purpose for improvement of product and service.
2	Adopt the new philosophy.
3	Cease dependence on mass inspection.
4	End the practice of awarding business on the price tag alone.
5	Improve constantly and forever the system of production and service.
6	Institute training.
7	Institute leadership.
8	Drive out fear.
9	Break down barriers between staff areas.
10	Eliminate slogans, exhortations, and targets that ask for new levels of productivity without providing specific improvement methods.
11	Eliminate numerical quotas. Substitute leadership.
12	Remove all barriers to pride in workmanship.
13	Institute a vigorous program of education and retraining.
14	Put everybody to work to accomplish the transformation.

Principles of a quality environment

Deming's fourteen points are based on six principles:

1. Quality is defined by the customer and is a result of improving the process.
2. Understanding and reducing variation in every process is a must.
3. Long-lasting quality improvements must originate with top management's commitment to improvement.
4. Change and improvement must be continuous and involve every member of the organization.
5. Education and training of all employees is a prerequisite for constant improvement.
6. Individual performance ranking schemes including rewards serve to impede natural initiative and fracture the team philosophy.

Continued on next page

Diseases that impede quality transformations

Deming (1986) describes seven diseases that stand in the way of quality transformations. These are

1. lack of constancy of purpose.
2. emphasis on short-term goals and profits.
3. personal review systems that devastate people.
4. mobility of management: job hopping.
5. over-reliance on visible figures with little or no consideration for unknown or unknowable figures.
6. excessive medical costs.
7. excessive costs of warranty.

A Natural Match—TQM and Tech Prep Planning

Overview

The complex problems facing educators charged with improving the preparation of tomorrow's workforce demand an entirely new approach to problem solving. The era when educators had to answer only to the local, often isolated, community no longer exists. Preparing students for work that changes as rapidly as technology dictates requires that the educational process embrace change. Students must be taught to anticipate, encourage, and manage change on a daily basis (Secretary's Commission on Achieving Necessary Skills, 1991).

Choosing the approach to TQM and Tech Prep

Planning for change requires extensive participation by customers (Juran, 1990). Customers of Tech Prep education include those internal (e.g, educators, parents, students, administrators) and external (e.g., employers, labor, taxpayers) to the process. Keeping the intent of the legislation at the forefront of Tech Prep planning processes provides both internal and external customers common quality goals to work toward. By putting quality first, each consortium can select the theorist and approach most applicable to its local needs.

When selecting an approach to TQM, each consortium should consider such factors as organizational structure, decision-making procedures, and the history of implementation of change. Businesses frequently report that one or another TQM approach is not satisfactory, so they blend ideas from several theorists to create a TQM approach that suits their company's situation. We encourage you to do the same as you consider implementing Tech Prep and TQM strategies.

For the purpose of illustrating the parallels between TQM and Tech Prep, however, we have chosen to use Juran's approach to implementation of strategic quality management. Juran (1990) cites eight essential prerequisites for establishing and meeting quality goals.

Continued on next page

A Natural Match—TQM and Tech Prep Planning, continued

Juran's eight essential prerequisites

Prerequisite	Action
1	Provide leadership from the executive staff.
2	Establish the quality vision and policies.
3	Establish broad quality goals.
4	Deploy the quality goals to all levels of the organization.
5	Provide the needed resources, including training.
6	Establish measurement.
7	Review performance regularly.
8	Revise the reward system to give adequate priority to quality and quality improvement.

Guiding principles of TQM and Tech Prep

Guiding principles provide the basis for the development of any TQM system. An examination of principles provided by theorists described earlier in this chapter reveals similarities with principles of Tech Prep. Some of the similarities include the importance of meeting customer or student needs, a focus on improving processes, the importance of planning, and the use of systematic measurement and evaluation. Presented below are parallels between seven common principles of TQM and Tech Prep.

TQM Principles	Tech Prep Principles
Customer needs drive quality improvement.	Student needs drive Tech Prep.
End-to-end processes are the focus of quality improvement.	Articulation, integration, and collaboration are end-to-end processes key to Tech Prep.
Everyone manages a process specific to his/her work.	Everyone manages a process related to Tech Prep.
Quality improvement never ends.	Quality improvement never ends.
Planning ensures high quality products and services.	Planning ensures high quality outcomes for Tech Prep.
Valid measures are the basis for continuous improvement of work processes, products, and services.	Valid measures are the basis for continuous improvement of all aspects of Tech Prep.
Leadership development for *all* is essential to making TQM work.	Leadership development for *all* is essential to making Tech Prep work.

Continued on next page

Implementation of TQM and Tech Prep

As with the comparison between TQM and Tech Prep principles, there are also strong relationships between TQM and Tech Prep implementation strategies. The parallels begin with the importance of leader commitment and extend through revision of reward systems. The table presented below illustrates similar TQM and Tech Prep implementation strategies.

Juran's Prerequisites	Tech Prep Implementation
Provide leadership from executive staff.	Gain support from leaders for Tech Prep.
Establish the quality vision and policies.	Create a shared quality vision and policies to support Tech Prep.
Establish broad quality goals.	Formulate and prioritize quality goals.
Deploy the quality goals to all levels of the organization.	Deploy the goals of Tech Prep throughout the entire consortium.
Provide the needed resources, including training.	Provide the needed resources, including training.
Establish measurements.	State desired outcomes and establish measurements.
Review performance regularly.	Review performance regularly.
Revise the rewards system to give adequate priority to quality improvement.	Revise the reward system to give adequate priority to quality improvement of Tech Prep.

Applying Juran's prerequisites to Tech Prep

A closer look at each of Juran's prerequisites provides Tech Prep leaders with a potential formula for managing the process that is the promise of the Perkins legislation: Tech Prep. While this discussion cannot possibly contain all the answers, we think it is a good place to begin.

Leadership From Executive Staff

Quote

> "The leader's primary contribution is in the recognition of good ideas, the support of those ideas, and the willingness to challenge the system in order to get new products, processes, and services adopted."
>
> Kouzes and Posner (1990, p. 8)

Leadership responsibilities

The following table gives responsibilities, ideas for achieving them, and a rationale for the roles assumed by leaders.

Responsibility	How to do	Rationale
1. Know the work being supervised.	Be involved enough to understand • situations • options • opportunities for improvement.	Deming says "a leader understands how the work of [the] group fits into the aims of the company. The purpose of [the] group is to support these aims. [The leader] works in cooperation with preceding stages and with following stages toward optimization of the efforts of all stages" (Aguayo, p. 177).
2. Enable others in the organization to reach their potential.	Remove barriers that make work impossible.	Deming & Juran: 85% of the problems in a organization are caused by the system and only 15% by individual employees. It is processes that demand the most scrutiny for improvement opportunities.
3. Drive out fear.	Remove or avoid blaming employees.	Establish an environment in which empowered employees can reach their potential.
4. Treat all members of the organization as equals and avoid ranking employees on performance or worth.	Recognize performance that falls short of acceptable standards and enable workers to receive needed training or move to positions where they can contribute.	Singling out individuals establishes a competitive atmo-sphere that is counterproductive to teamwork.

Continued on next page

The meaning of leadership

While the word "leadership" has no single set of descriptors for every situation it does imply attributes that set it aside from management or supervision. Kouzes and Posner (1990) state that the distinction lies between "getting others to do and getting others to want to do" (p. 27). Whether or not that difference is accomplished depends upon the credibility of the leader's actions. According to Kouzes and Posner, a leaders' actions are to

- challenge,
- inspire,
- enable,
- model, and
- encourage.

Implications for Tech Prep

TQM requires a commitment from every person involved in the process. In order for school, college, business, and community leaders to take an active role in implementation of Tech Prep, there is a need to educate them about all aspects of it. Within the schools, early support from principals, superintendents, counselors, and academic teachers seems to be directly related to the success of the program.

Roles and responsibilities of key groups

Bragg (1991) shared examples of the roles and responsibilities of faculty; administrators, business, industry, and labor representatives; counselors; university faculty; state agency staff, and students and parents. Each of these stakeholder groups, at both the secondary and postsecondary level, and internal and external to vocational education, is seen as critical to implementing Tech Prep. The following table illustrates selected roles and responsibilities of leaders involved in Tech Prep initiatives.

Continued on next page

Leadership From Executive Staff, continued

Roles and responsibilities of key groups (continued)

Stakeholder Group	Selected Roles and Responsibilities
College presidents, School superintendents, Board members and Trustees	• Develop a vision of Tech Prep in conjunction with other consortium leaders • Communicate the vision • Develop a philosophy and policies about Tech Prep • Commit resources • Encourage and reward participants in the implementation process
College deans, School principals	• Develop a vision of Tech Prep in conjunction with other consortium leaders • Lead articulation, integration, and collaboration efforts • Coordinate planning and implementation • Identify and encourage planning teams • Share resources • Review and reward accomplishments
Business, industry, labor, and community leaders	• Develop a vision of Tech Prep in conjunction with other consortium leaders • Communicate the vision • Commit resources • Educate and gain support from other business and community leaders • Share in the planning and implementation process
Faculty, Counselors, Students, Parents	• Communicate student needs • Develop, review, and react to plans • Design and implement curriculum jointly with secondary and postsecondary and academic and vocational faculty and staff • Educate others about Tech Prep

Source: Bragg, D. (1991). *Illinois Tech Prep planning strategies.*

Effective leadership for Tech Prep

Without a thorough understanding of Tech Prep, leaders cannot be expected to understand how it can impact their institutions. Furthermore, they cannot be expected to provide guidance throughout its planning and implementation phases. This education can occur through leadership and staff development activities at the local, state, and national level.

Effective leadership is crucial to the success of Tech Prep. Where leadership is absent or when commitment is given only lip service, the investment of human resources will be wasted. Care must be taken to involve people with leadership qualities at each level of educational delivery. The ability of leaders to see the future of workforce preparation will be reflected in outcomes evaluated in the years ahead.

A Quality Vision and Policies

Quote

> "We give leadership when we create a vision that positions our unit in relation to the customer and our own colleagues. Our vision channels our deepest values into the work place and becomes a word picture of how we want our values to be lived out in our unit."
>
> Block (1987, p. 102)

Four attributes of vision

The term vision entered management vocabulary in recent years as a result of research on effective leadership styles. Kouzes and Posner (1990) list four attributes of vision. They describe vision as a "see" word that

- invokes images and pictures.
- suggests a future orientation.
- connotes a standard of excellence.
- has a quality of uniqueness.

The power of vision

No one will argue that the art of establishing a vision is easy. It is difficult to explain and even more difficult to quantify. The power of vision can be felt in organizations where leaders have created and communicated their view of the future to each member of the organization. According to Block (1987), creating a vision aids employees in the "discovery that serving the organization also serves [their] self interest" by incorporating personal values into the workplace (p. 102).

Five tips for creating vision

Block (1987) provides five tips for creating a vision:

1. Forget about being number one. A vision statement should focus on what the individual wants to contribute to the organization, not what the outside world will think of the organization.
2. Don't be practical. A vision should be an expression of our idealistic selves. It should be a "lighthouse giving us direction rather than a specific destination" (p. 110).
3. Begin with your customers. To start in the right direction, keep in mind the golden rule.

Continued on next page

Five tips for creating vision (continued)

4. Identify your values and beliefs about human interactions and be sure they are reflected in your own workplace.
5. Don't be pragmatic or conservative. If your vision statement sounds like motherhood and apple pie and is somewhat embarrassing, it is on the right track.

Choosing a vision is an act of faith, which is "unmeasurable and indefensible" (Block, 1987, p. 104). It also forces the individual to assume accountability for behaving consistently with that vision. This concept is similar to Deming's view that an organization's internal benchmarks are more important than its external judgments (1986).

Implications for Tech Prep

Establishing a vision is essential for Tech Prep leaders if it is to be the blueprint for taking education where it has never been before. Perkins II was deliberately written to allow the states flexibility to tailor Tech Prep to meet local needs. This lack of a blanket prescription requires vision during planning.

Uncharted territory demands a pioneering spirit! Along with the fear of such an endeavor comes the opportunity of discovering a system better than any in existence. The ability to "see" the system as it could be begins the process.

The freedom to adapt legislation to local needs presents a challenge to each consortia. Developing a mission statement that reflects each participants' perspective means

- beginning the process by employing teamwork,
- requiring a consensus be reached, and
- providing direction for each member involved in the initiative.

Building a shared vision for Tech Prep

Senge (1990) reports that building a shared vision is deceptively simple, but takes time. It develops from the collective idea of everyone involved in the initiative. To develop a vision requires personal commitment to one's ideas while actively listening to what others are saying. An openness to new ideas and commitment to reaching consensus is critical to the process.

Continued on next page

Building a shared vision for Tech Prep (continued)

The vision statement for Tech Prep can evolve from the following three simple questions:

- What is the future we seek for our students?
- Why is that future important?
- How will we behave to carry out that future?

Once a vision for Tech Prep is adopted, it is important for each institution in a consortium to examine its policies to ensure their congruence with the vision.

Communicating the vision

Leadership commitment to Tech Prep can be reinforced by using the following communication techniques:

- Know the beliefs and attitudes of the institutions in the consortium.
- Communicate in a positive manner.
- Include everyone.
- Use "we" rather than "I" when referring to consortium goals or actions to establish ownership for Tech Prep.

Broad Quality Goals

Quote

> "Goals are typically stated in the form of specifications to be met, or procedures to be followed. Of course, such goals are substitutes for the real thing; the real goals are to meet customer needs."
>
> Juran (1989, p. 272)

Transferring the vision to goals

Sharing the vision with people involved at every level of an organization is the initial step in establishing broad quality goals. A great leader with a brilliant vision is ineffective if the vision is not, first, adopted by others in the organization and, second, translated into goals to implement visionary ideas.

Goals are more limited than a vision. They are a specification of what is to happen during the next day, month, or year (Block, 1987). Deming (1986) explains that establishing goals without clear directions about how to attain them is useless. It is, however, a common mistake made by many American managers.

Implications for Tech Prep

Tech Prep goals are unique to local consortia but take their direction from the Perkins II legislation. Organizations committed to quality improvement have unique institutional goals as well, yet they too take their direction from TQM principles.

Students of Deming and Juran report the following goals must be adopted and applied by any organization committed to quality:

- Improve customer service
- Reduce failures, error rates, and time cycles
- Reduce costs associated with poor quality

Continued on next page

Tech Prep quality goals

The first column in the table below lists three quality goals. The second column shows that the goals, when applied to Tech Prep, parallel the intent of the Perkins legislation.

Quality Goal	Intent of Perkins Legislation
Improve customer service	Meet the needs of students enrolled in Tech Prep by providing work-relevant education offered at convenient times and locations.
Reduce failures, errors, and time cycles	• Establish dropout prevention and recovery programs. • Integrate vocational and academic content. • Eliminate duplication by establishing core courses that facilitate articulation between programs and institutions.
Reduce costs associated with poor quality	Reduce the cost of education by • sharing resources among educational systems and businesses, and • employing teams in teaching, learning, and managing education.

These three potential goals, while not possible for every Tech Prep initiative, are illustrative of goals that can begin to enable Tech Prep to accomplish its larger goal of reducing the cost to our country of an unprepared workforce.

Goal setting for Tech Prep

In order to move forward with goal setting, the following steps are suggested.

Step	Strategy
1	Communicate to everyone the vision and policies for Tech Prep.
2	Encourage individuals to identify quality goals that • address student needs, • demonstrate an improved approach to education, • reduce inefficiencies, and • impact community and societal needs.
3	Rank goals.
4	Reach consensus on top priority goals.
5	Develop specific, quantifiable goals.

Deployment of Goals To All Levels of the Organization

Quote

> "Goals are 'wish lists' until they are deployed to lower levels. These levels identify the specific projects to be carried out to meet the main goals."
>
> Juran (1989, p. 72)

Rationale

Deploying goals to all levels of an organization establishes empowerment, which leads to increased productivity. Empowerment is the essence of the expandable power pie concept which Kouzes and Posner (1987) credit for establishing strong attachments between subordinates and leaders. When subordinates are strengthened, the influence of leadership is increased, building credit that can be drawn upon when extraordinary efforts are required.

The art of delegation

Delegating the execution of goals is a critical step towards ensuring the success of a quality initiative. Because implementation of a quality initiative increases workload as much as ten percent (Juran, 1989), leadership must prove by words and actions that they are committed to the effort.

Juran reminds leaders that delegating quality goals parallels sound advice in delegating traditional work loads. In order to secure priority for the quality initiative, its goals must be

- clear and structured.
- accompanied by resources.
- tied to performance reviews.

Communication is key

Leaders enable others to act. They must have a plan for establishing and implementing goals that integrates everyone involved in the process. This is most efficiently accomplished by organizing teams to address the various needs encountered, from planning to evaluation. (A more detailed look at teamwork and its relationship to Tech Prep is covered in Chapters 7 and 9, respectively.)

Creating connections between participating institutions falls into the critical area of communication. How much ill will, anger, and ultimate failure of individual and group efforts can be blamed on poor communication?

Continued on next page

Deployment of Goals To All Levels of the Organization, continued

Communication networks for Tech Prep

Each local consortia must share the intent of the legislation and its goals with people, departments, and institutions outside of the vocational arena, many that have not heard of Tech Prep.

Establishing communication networks within the Tech Prep arena is necessary to insure that

- progress is noted.
- duplication of effort is eliminated.
- miscommunication is avoided.

Communication mechanisms (e.g., newsletters, e-mail, meetings) must be accessible to any participant in the delivery process and must consistently reach all participants.

Implications for Tech Prep

Leadership must recognize and provide for the increased time needed to accomplish communication efforts. Finding time to meet and plan any educational endeavor is difficult in most schools and colleges. Staff usually have little uncommitted time and rarely do their brief planning times coincide. Therefore, it is very important for Tech Prep grant funds to be used for release time and substitute teachers so that staff can be actively involved in planning Tech Prep on a regular basis.

Faculty empowerment is crucial if Tech Prep is to succeed. A high-performance work organization using basic TQM organizational principles depends on front-line workers for problem identification and solution. Educational institutions must delegate greater managerial authority to faculty, their front-line workers. The interrelationship of institutional staff and administrative staff should reflect an atmosphere of teamwork.

Reach consensus about Tech Prep

Local school districts often exert a great deal of control over decision making about curriculum, staffing, and student policies. Therefore, when implementing Tech Prep throughout a consortium of multiple school and college districts, it will take time to reach consensus about purpose, goals, target populations, and curriculum.

Integrating the goals, needs, and expertise of diverse stakeholders is identified as critical but sometimes difficult to accomplish. Proceeding with any initiative without the full support and understanding of

Continued on next page

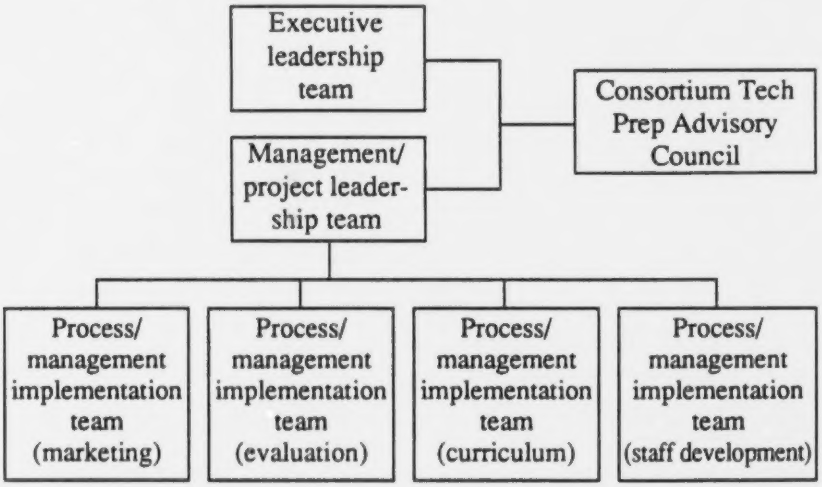
Reach consensus about Tech Prep (continued)

these stakeholders later burdens implementation processes and threatens the eventual success of Tech Prep. Fullan (1991) contends that providing opportunities for teachers to discuss and plan a new program has a lasting impact on how fully they are implemented. Huberman (in Fullan, 1992) supports the idea of involving teachers to gain commitment to a new program. He writes:

> "It was only when teachers had undergone a few cycles of experimentation, then reflected on what appeared to be emerging 'constants' and began toying with different combinations of them, that they got on top of the programme [sic] in conceptual terms. This, in turn, strengthened their technical mastery and heightened their commitment" (p. 10).

An organizational structure for deployment

A framework for deploying Tech Prep within a consortium needs to be formally adopted. Some variation of the following organizational structure is viewed by many consortia as an effective way to approach Tech Prep implementation.


Executive leadership team
Consortium Tech Prep Advisory Council
Management/ project leadership team
Process/ management implementation team (marketing)
Process/ management implementation team (evaluation)
Process/ management implementation team (curriculum)
Process/ management implementation team (staff development)

Along with the consortium-wide teams, each institution in the consortium forms a site-based implementation team. These teams take responsibility for planning and implementing the Tech Prep initiative within their own schools or colleges. These teams are vital to the entire initiative as they provide a backbone for implementation of curriculum integration, articulation, collaboration, and evaluation efforts.

Provision of Resources, Including Training

Quote

> "Managing for quality demands some sharp breaks with tradition—virtually a change in culture... requiring corresponding changes in the area of training."
>
> Juran (1989, p. 321)

Advice to educators

Training is viewed as an essential component of the culture of organizations committed to continuous quality improvement. Regardless of where training begins, all participants must eventually receive training. The focus of this training is on the principles of how to implement quality improvement in all facets of work processes.

The 1980s saw a tremendous increase in both the demand for and body of quality-related knowledge. The quality training curriculum should keep in mind needs of various categories of personnel and be tailored to the requirements and constraints of the organization.

Applied to quality improvement principles, all development activities need to be tied to acceptable standards of performance. It is the responsibility of leadership to define the parameters of what is acceptable. This entails

- determining improvement areas.
- enlisting qualified trainers.
- providing the time for development activities.
- evaluating the effectiveness of training programs.

Cautions for designing training

Miller (1991) cautions institutions that wish to keep up with the demands of current educational imperatives. He says they must value the "natural flexibility and growth potential of their human resources" (p. 119). Eble and McKeachie (1985) caution educational administrators to introduce faculty development programs so as not to imply that faculty are inadequate. If persons in the system are functioning outside the acceptable boundaries of performance, they should be allowed the opportunity to identify the unacceptable behavior and correct it.

Continued on next page

Provision of Resources, Including Training, continued

Training for Tech Prep

In business, training is needed when a worker is faced with a new task or machine. Tech Prep can be viewed as a new machine for the educational process. The resources needed to fully utilize it fall largely in the staff development area and this is recognized by requirements in Perkin II for joint training of faculty and counselors of secondary and postsecondary institutions.

Each person involved in the Tech Prep initiative has the professional responsibility to constantly upgrade technical and professional skills as well as to enhance leadership and management skills. Integrating vocational and academic education adds new requirements in teaching methods and increases the need for awareness of the content of the domains to be integrated.

Steps in the staff development process

There are many ways to approach staff development for Tech Prep. Bragg (1991) offers a seven-step strategy for developing staff development for Tech Prep which follows:

Step	Strategy
1. Awareness	Establish basic understanding of Tech Prep.
2. Readiness	Address the need for Tech Prep.
3. Planning	Involve personnel in learning about Tech Prep by having them contribute to the planning process.
4. Collaboration	Ensure joint staff development across sites in the consortium.
5. Implementation	Ensure staff development is central to implementation of the entire initiative.
6. Management	Manage the ongoing staff development process.
7. Evaluation	Assess the effectiveness of staff development by determining its contribution to implementation of Tech Prep and impact on student outcomes.

Continued on next page

Staff development: A key to successful implementation

Research on educational change reinforces the importance of a vital staff development component for any new educational program (Fullan, 1992; Fullan, Rolheiser-Bennett, & Bennett, 1990a; Little, 1990b; Stallings, 1989). Some important lessons learned about how to design staff development follow:

- Success in implementation of any new educational program in terms of producing positive student outcomes is closely related to the use of staff development (Stallings, 1990).
- Staff development will not have its intended impact if it is isolated from other aspects of implementation of a new program (Fullan, 1992).
- Learning by doing (i.e., learning by solving problems and designing new educational environments) is crucial to both staff development and successful implementation of a new program (Stallings, 1990).
- Innovations rarely occur through the work of an isolated individual. Coaching and mentoring can be effective ways to engage pairs or small groups of teachers in staff development and implementation of an educational innovation (Little, 1990a).
- Building on relationships between classroom and school improvement can improve the success of implementation of a new program. Involving teachers as learners in efforts to make continuous improvements is vital (Fullan, Rohlheiser-Bennett, & Bennett, 1990).
- Achieving collegiality among teachers is difficult over the long-run in many educational institutions. Often schools and colleges must undergo tremendous structural change before collegiality can be supported. Taking the pulse of the organization and examining the culture for collegiality should be first steps in designing staff development and implementing new programs (Fullan, 1992).
- Viewing staff development as a separate centralized undertaking and, furthermore, seeing it as someone else's responsibility poses a serious threat to its effectiveness. It is only by linking staff development to educational change that lasting improvements can occur (Little, 1990b).

Measurement

Quote

> "Attaining good quality requires precise communication among customers, processors, and suppliers. Such precision is best achieved when they 'say it with numbers.' "
>
> Juran (1989, p. 153)

Establishing measures

The practice of establishing measures of performance and the goals of quality improvement are inextricably intertwined. If you cannot measure results, you cannot identify or control the process of improvement (Ackerman, Coleman, Leger, & McDorman, 1989).

The practices of establishing measures also forces priorities. Time prohibits us from measuring everything, so we must be selective in choosing processes that have the most impact on affecting the quality of the goods or services provided. The right measures provide the basis for determining how well any process is meeting the needs of its customers, both internal and external.

Implications for Tech Prep

Any TQM initiative is a highly data-driven effort. Many educational institutions—secondary and postsecondary—do not have the kinds of measures needed to evaluate Tech Prep processes or outcomes. While the establishment of measurement is consistent with other accountability movements currently underway in education, it will take time to design and implement a measurement system of the scope required to evaluate Tech Prep.

Bragg and Kirby (1992) explain the intent of performance standards and measures under Perkins II is to improve vocational education program quality, specifically in the areas of academic skill attainment and occupational preparation. With Tech Prep, particular emphasis is placed on ensuring the diverse American population is capable of competing successfully in a world economy.

Leadership summit recommendations

A forthcoming report of the National Center for Research in Vocational Education (NCRVE) summarizes recommendations made at the Tech Prep Leadership Summit in June 1992 to include design measures that

- reflect both formative and summative outcomes;
- include accountability for all parties in the consortia;
- reflect the broader purpose of Tech Prep, going beyond those typically established for vocational education; and
- determine the effectiveness of the implementation process.

Continued on next page

Measurement, continued

Ten recommendations for measuring quality

Designing an accountability system that is sensitive to the needs of both internal and external customers is extremely challenging. Given the many potential goals of Tech Prep and the demands for demonstrated accountability, Bragg and Kirby (1992) offer ten recommendations for measurement.

Recommendation	Notes
1. Document goals given top priority.	Write clear goal statements that can lead to relevant outcome measures and standards.
2. Identify specific measures for goals.	Select and develop measures that accurately and consistently reflect quality goals that guide the program.
3. Use multiple measures.	Select and develop sufficient measures to reflect the breadth and depth of goals without becoming overwhelming.
4. Prioritize measures.	Begin by measuring the most critical goals (because resources are usually limited).
5. Refocus and add new measures, when needed.	Validate new measures as goals change and infuse them into the measurement system.
6. Build on existing data collection methods.	Modify existing measurement tools and processes to maintain consistency with previous measurement and to ease into complex new evaluation areas.
7. Ensure process indicators are included.	Develop measurement systems that can tie outcomes to processes and "best practices." Do not abandon functioning evaluation systems that focus on processes just because outcomes are the current priority of measurement.
8. Evaluate qualitative and quantitative outcomes.	Evaluate program quantity (e.g., percent of program completers) and program quality (e.g., satisfaction of students and employers). Over-reliance on either type of measure could produce an incomplete picture of quality.
9. Consider the needs of potential data users.	Do not focus only on the demands of policymakers and bureaucrats and neglect other measurement requirements that can reflect important indicators of quality. Establish feedback mechanisms to report results to data users.
10. Ensure continuous improvement.	Review and refine measures and standards to ensure continuous quality improvement. Global competition requires meeting, exceeding, and raising standards.

Performance Review

Quote

> "Reviews of progress are an essential part of assuring that goals are being met."
>
> Juran (1989, p. 210)

Periodic performance reviews

Continuous improvement implies a never-ending process. In order to ensure the process continues in the desired direction, periodic performance reviews are necessary. Juran (1989) reminds us that if leadership cares enough to review progress, it sends a clear message about the priority given to quality goals.

Keeping with the quality philosophy, reviews should measure performance against goals and the degree to which outcomes are meeting customer needs, not with the purpose of ranking or comparing one outcome against another. This discourages the cooperative behavior necessary to maintain effective programs. Relinquishing competitive behavior is a challenge to Americans and requires reinforcement and coaching from leadership.

Feedback to team members

To ensure successful outcomes, planning and implementation processes must be monitored regularly. According to Rummler and Brache (1990), the cornerstone of process management is review and feedback to team members.

"To manage the performance of a process, one must manage the performance of the people who work within that process." (Rummler and Brache, 1990, p. 138). To be effective, performance review must be:

- relevant.
- accurate.
- timely.
- specific.
- easy to understand.

Implications for Tech Prep

Tech Prep requires a highly interactive educational delivery system. Feedback on performance must take this into account. A network of management/project leadership teams, process management implementation teams, and site-based implementation teams provides a way to communicate throughout the consortium. By using these teams to support and reinforce the entire Tech Prep initiative, a mechanism for review and feedback can be formed.

Reward Systems for Quality Improvement

Quote

> "Quality happens when people make it happen. The people who make it happen, individually and in teams, should be generously recognized and appropriately recorded. Their successes should be joyously celebrated."
>
> Spanbauer (1992, p. 165)

Reward systems

Reward systems must provide the kind of incentives that motivate performance consistent with the goals of Tech Prep. Tosti (1986) suggests the importance of two types of incentives: recognition and rewards. Recognition includes praise, certificates, public acknowledgments, and publicity.

Rewards can be tangible (e.g., cash, travel) new job tasks (e.g., advanced training, relief of undesirable duties) or new job responsibilities, (e.g., participation in decision making, authority to choose own tasks). When designing reward systems, Tosti (1986) suggests

- having a particular individual or organization in mind,
- brainstorming a list of reward and recognition ideas,
- prioritizing the list by their likelihood of appeal, weighed against available resources,
- offering the reward or recognition and obtaining feedback about its perceived value, and
- revising and improving the reward system.

Formal recognition

Formal methods of recognition of quality performance and improvement should be timely and take on many forms. There should be a permanent place on the working agenda of every meeting to recognize accomplishments. Attendance should be recorded in meeting minutes as subtle recognition of who is present. Team activities can be communicated via newsletters.

While every member deserves and requires training to ensure continuous improvement, special training can be offered to teams that meet or exceed goals in an efficient manner. Opportunities for professional development benefit the individual and ultimately the group and institution facilitating quality improvement.

Continued on next page

Reward Systems for Quality Improvement, continued

Informal recognition

Informal recognition should occur on a daily basis. Small achievements can be recognized by kind words and a handshake. It is often simple actions that keep momentum going when energy and interest are waning.

Implications for Tech Prep

Providing monetary rewards for individuals who become involved in Tech Prep will be difficult. While it may be possible to impact salary schedules in the long term as Tech Prep matures, it is unlikely this will occur in the short term. Therefore, it is important to consider ways grant funds can be used to provide non-monetary incentives for implementing Tech Prep.

Asking individuals about what motivates them to contribute to Tech Prep is probably the best way to identify rewards. It is also important to recognize that what rewards one may not another. It is important to provide a variety of rewards and incentives for participation in Tech Prep.

Spiral of confidence

Whatever reward is used, criteria for achieving it should be clearly stated, available to all, and meaningful to the participants. Investment in human resources through professional development builds a spiral of confidence. This serves as an intrinsic reward for those involved with and responsible for improvement as well as for the external customers whose expectations must be met.

As systems achieve improvements, they create opportunities for American businesses to gain a larger market share, return higher profits, and generate greater incomes for individual employees. Ultimately, dollars can be reinvested in the education system at local, state, and national levels to generate opportunities for further improvement.

The challenges educators face in future years will certainly increase in complexity. Therefore, it is not too soon to begin the quality improvement process and ensure its success with effective reward systems.

Challenges in Applying TQM to Tech Prep

The challenges

While it is impossible to predict every challenge that could stand in the way of using TQM to implement Tech Prep, it is possible to anticipate areas by examining the difficulties other business and educational institutions have encountered with the approach. These areas are summarized below.

Establishing leadership buy-in

Enlisting support of individuals in key leadership positions is crucial to the success of the initiative. This can be more easily accomplished if a sincere message is communicated that Tech Prep is here to stay. This commitment entails resourceful thought and actions in applying Juran's (1990) essential prerequisites of strategic quality management to Tech Prep.

Both the time and resources needed to train people to carry out Tech Prep implementation using TQM principles presents a challenge to overburdened teachers and administrators as well as underfinanced school districts. Establishing partnerships with business, industry, and labor requires yet other groups become part of Tech Prep and work themselves into meeting schedules. However, benefits of the insights and resources provided by these groups can far outweigh the logical hurdles of coordinating schedules. Seeking the input of internal and external customers provides a wealth of information for implementing Tech Prep.

Providing training

In education, control over an incoming product is relatively minimal, yet accountability for adding value and producing relatively defect-free products is high. Resource limitations and quality demands will continue to be a reality in education and only serve to strengthen the argument for establishing effective measurements in order to establish accountability. Employers, one customer of education, can provide input into the educational process to help insure that it meets and exceeds the increasing demands for a competitive world-class workforce.

Continued on next page

Rolling with the punches

Kouzes and Posner, authors of *The Leadership Challenge* (1990) painstakingly sought to provide both practical and inspirational advice to leaders. They state it all comes down to attitude—the type of attitude that challenges the process. They offer three important lessons from their research that have direct application to leaders charged with implementing Tech Prep and exemplifying the environment created by TQM.

> First, people who become leaders do not always seek the challenges they face. Challenges also seek leaders.
>
> Second, opportunities to challenge the status quo and introduce change open the doors to doing one's best. Challenge is the motivating environment for excellence.
>
> Third, challenging opportunities often bring forth skills and abilities that people do not know they have. Given the opportunity and the support, ordinary managers can get extraordinary things done in organizations (Kouzes and Posner, 1990, p. 39).

References

Ackerman, R., Coleman, R., Leger, E., & McDorman, J. (1987). *Process quality management and improvement guidelines*. Indianapolis, IN: Publication Center, AT&T Bell Laboratories.

Aguayo, R. (1990). *Dr. Deming*. New York, NY: Carol.

Axland, S. (1991). Looking for a quality education? *Quality Progress, 30*(10), 61-72.

Bales, E. (1992, April). *Motorola's application of quality in American education*. Presentation delivered at meeting of the Illinois Community College Economic Development Association, Schaumburg, IL.

Block, P. (1987). *The empowered manager*. San Francisco, CA: Jossey-Bass Publishers.

Bragg, D. (1991). *Illinois Tech Prep planning strategies*. Springfield, IL: Illinois State Board of Education.

Bragg, D. & Kirby, C. The new age of accountability. In *Update research brief, 2*(2). Champaign, IL: University of Illinois, College of Education.

Brandt, R. (1992). The quality movement's challenge in education. *Educational Leadership, 49*(6), 5.

Bryce, G. R. (1991). Quality management theories and their application. *Quality, 30*, 15-18.

Coate, L. E. (1990, November). TQM on campus. *NACUBO Business Officer*, 26-35.

Crosby, P. B. (1979). *Quality is free*. New York, NY: McGraw-Hill.

Crosby, P. B. (1985). *Quality without tears*. New York, NY: New American Library.

Deming, W. E. (1986). *Out of the crisis*. Cambridge, MA: Massachusetts Institute of Technology Center for Advanced Engineering Study.

Eable, K. E., & McKeachie, W. J. (1985). *Improving undergraduate education through faculty development*. San Francisco, CA: Jossey-Bass.

Fullan, M., Rolheiser-Bennett, C., & Bennett, B. (1990). Linking classroom and school improvement. *Educational Leadership, 47*(8), 13-19.

Continued on next page

Fullan, M. G. (1991). *The new meaning of educational change.* New York, NY: Teachers College Press.

Fullan, M. G. (1992). *Successful school improvement.* Buckingham, England: Open University Press.

Gabor A. (1990). *The man who discovered quality.* New York, NY: Random House.

Hunt, V. D. (1992). *Quality in America: How to implement a competitive quality program.* Homewood, IL: Business One Irwin.

Juran, J. M. (1989). *Juran on leadership for quality.* New York, NY: Free Press.

Juran, J. M. (1990). U.S.A. quality: status and prognosis. *The BENT of Tau Beta Pi, Winter,* 25-28.

Kouzes, J. M., & Posner, B. Z. (1990). *The leadership challenge.* San Francisco, CA: Jossey-Bass.

Little, J. (1990a). The persistence of privacy, autonomy, and initiative in teachers' professional relations. *Teachers College Record, 9*(4), 509-36.

Little, J. (1990b). The mentor phenomenon and the social organization of teaching. In C. Cadzen (Ed.), *Review of research in education, 16.* Washington, DC: American Educational Research Association.

Miller, R. I. (Ed.). (1991). *Applying the Deming method to higher education.* Washington, DC: College and University Personnel Association.

National Center for Research in Vocational Education, (forthcoming). *Tech Prep leadership summit: A conference report.* Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Procter & Gamble. (1989). *Total quality.* Cincinnati, OH: Author.

Rummler, G.A., & Brache, A.D. (1990). *Improving Performance.* San Francisco, CA: Jossey-Bass.

Secretary's Commission on Achieving Necessary Skills. (1991). *What work requires of schools. A SCANS report for America 2000.* Washington, DC: U.S. Department of Labor.

Continued on next page

References, continued

Senge, P. M. (1990). *The fifth discipline*. New York, NY: Doubleday/Currency.

Spanbauer, S. J. (1992). *A quality system of education*. Milwaukee, WI: ASQC Quality Press.

Stallings, J. A. (1989, April). *School achievement efforts and staff development: what are some critical factors*? Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.

Tosti, D. (1986). *Feedback systems: Introduction to performance technology*. Washington, DC: National Society for Performance and Instruction.

Chapter 7

Implementing Tech Prep With Teams

Catherine L. Kirby and James D. Layton

Overview

Background

Ideally Tech Prep teams are composed of representatives from every group that has a stake in the promise Tech Prep offers to the American workforce. However, gathering key stakeholders and organizing them into advisory committees, planning teams, leadership teams, and teaching teams does not ensure that teamwork will occur. Effective teams evolve over time and through the conscientious efforts of committed people.

Groups of people involved in various Tech Prep teams bring a variety of expertise that no single member possesses. Integrating individual talents and concerns represented by team members requires training in group process techniques. Aubrey and Felkins (1988) describe teamwork as a participative process where groups of people are

- trained in problem solving techniques, and
- committed to sharing the goal of improving quality and productivity.

In this chapter

The purpose of this chapter is to reinforce the necessity of employing teams to accomplish the implementation of Tech Prep as mandated by Perkins II. This can occur through use of teams during the implementation of Tech Prep and later at the administrative and classroom levels. The chapter provides guidance for achieving effective teamwork. This chapter discusses the following topics:

Topic	See Page
Teamwork and Tech Prep	7-2
Effective Leadership of Teams	7-4
Principles of Teamwork	7-6
How to Build Tech Prep Teams	7-8
Team Problem Solving	7-9
Summary	7-10
References	7-12

Teamwork and Tech Prep

Background

Passage of Perkins II carries a message to educators and businesses alike: In order to successfully compete in the world economy, we must combine forces to revolutionize the educational preparation of tomorrow's workforce. Together, employees and educators can provide the framework for strengthening the educational process that has often received criticism for not adequately preparing students for the world of work (Commission on the Skills of the American Workforce, 1990).

The process of quality improvement in education reinforces the importance of every individual's involvement in the art and practice of teamwork. No matter what quality improvement approach is chosen, "there is one emphasis that we find in all TQM programs without exception. It is teamwork" (Kinlaw, 1991).

Teamwork as a competency (SCANS)

Reinforcing the importance of teamwork, the Secretary's Commission on Achieving Necessary Skills (SCANS, 1991) identified teamwork as a major part of one of five competency areas all workers need for productive employment. Students enrolled in Tech Prep will benefit from observing teamwork in action. Integrating the principles of teamwork into academic and technical course work provides a model for students to carry into the world of work. It also applies the recommendations of the SCANS report and ultimately prepares students for the workplace of the next century.

Teamwork and TQM methods

Even though the concept of teams of faculty and staff working together is not a new idea, it has not traditionally been used in education. This tradition must end where the Perkins legislation begins its efforts. Individuals involved with Tech Prep do not need to shift gears from their planning, administering, and teaching activities in order to invent teamwork strategies to aid in those activities. A multitude of resources are available for the transition to a team approach. (See reference list to see resources on teamwork the authors found particularly useful.)

Continued on next page

Teamwork for quality improvement

Just as teamwork can be woven into the fabric of implementing the Perkins legislation, it is woven into TQM. Quality improvement projects are intra- and inter-departmental in nature, requiring input from a wide array of groups within an organization. Often called crossfunctional teams, these groups are employed to

- identify an improvement area, and
- work through the systematic process of problem solving.

Because improvement is seen as a continuous process in a quality-managed organization, these teams rarely run out of problems to tackle. The spirit of teamwork thus becomes an integral part of organizational fabric, spilling over into operational functions.

Teamwork to develop organizations

Teams can play an important role in increasing the overall effectiveness of their institutions by participating in a planned change such as Tech Prep. Organizational development skills that are important for team members to possess relate to

- viewing their team and institution as part of a larger system.
- organizing and managing human resources.
- rewarding people for actions consistent with a planned change.
- communicating interpersonally and intra- and inter-organizationally.
- educating people about components of change.
- using action research and team problem solving to support a change initiative.

To be successful in implementing Tech Prep, as an organizational development initiative, teams need to be skilled in the following:

- gathering data,
- providing feedback,
- diagnosing and resolving problems, and
- planning and managing change.

Overcoming barriers with teams

Effective teams create an atmosphere of cooperation that is fundamental to change and improvement (Aguayo, 1990). Teamwork serves to break down barriers. As barriers disappear, communication improves as each participant learns what others need and can provide. Quality improves as each group begins to view its relation to the whole as a vital component of the customer-supplier network. The most successful Tech Prep initiatives use a variety of teams to accomplish their goals. Gathering the right people begins the process.

Effective Leadership of Teams

Leader characteristics

Effective leadership within each team requires the right people be placed in leadership positions. "People skills" come naturally to some individuals, in others they may be acquired through training. Leaders should be comfortable with their role whether they have been appointed to the position or have volunteered. Adjectives such as "active-listener", "motivator", "flexible", and "non-judgmental" must apply to the team leader.

Leadership: the manager and the facilitator

An effective team often allocates leadership functions that are seen as the duties of a single leader to two individuals—the manager and the facilitator. Scholtes (1988) describes the manager as the leader who

- enables communication between the team and the organization.
- documents all team efforts and activities.
- participates as a full and active team member.
- continues to hold supervisory authority.
- carries out normal administrative duties (i.e. calling meeting and organizing activities).

The role of the facilitator differs substantially from that of the manager (Heron, 1989; Scholtes, 1988). The facilitator

- concentrates more on the team process than the product.
- helps the manager to allocate and assign individual tasks and to plan future meetings.
- assists the team in applying quality principles, understanding the TQM approach to data collection and analysis, and applying lessons learned from the proper use and presentation of the data.
- facilitates the group (i.e., deals with dominant and reticent members, resolves conflicts, and understands the use of these interventions).

A good facilitator has people skills, technical skills, and training skills.

Actions of leaders

Actions of those in leadership positions must reinforce principles that allow teamwork to take precedent over individual effort. Historically, American management has focused on singling out individuals for credit and blame. Aguayo (1990) cites this phenomenon as the reason quality control circles largely failed in the United States. Teamwork requires realigning individual needs, and placing them secondary to group needs.

Continued on next page

Effective Leadership of Teams, continued

Team size

Team size is often dictated by the purpose for which the group was formed. There is no ideal or standard number but care should be taken to ensure each member has a critical role. Scholtes (1988) recommends no more than five individuals on a team in addition to the leader and facilitator. He contends this small group size facilitates communication and action. Scholtes advises that additional expertise can be obtained by consulting with others on particular problems or creating an ad hoc effort in addition to the regular work of the team. Group size should be flexible as the demand for the group's product or performance changes over time.

New member training

As new members join a team, training should be provided quickly and include

- goals and status of the present team,
- ground rules for group process, and
- assignment of a mentor to ease the transition.

Any activity that facilitates the team's forward progress is appropriate.

Team training is necessary

Teams are essential to the success of Tech Prep and TQM. It should not be taken for granted that team members are aware of team concepts simply because they have experience in committee work or serving on boards.

A deeper knowledge of group dynamics and processes of working teams is critical. Members of a team should have an understanding of

- how to build and maintain commitment to the initiative.
- the relationship of the team to the total process.
- the context in which the team operates.
- how group processes can be used to accomplish the work of the team.
- how group processes influence educational change.

Principles of Teamwork

Overview

The team must feel a sense of ownership in the initiative. Personal involvement and commitment of each member of the team is essential to such a complex and lengthy undertaking.

According to Berg (1991), there are five basic elements that are needed to build and maintain productive teamwork:

- build commitment to improving quality
- develop trust
- encourage open communication
- manage conflict constructively
- establish ongoing assessment of the team process

Commit to quality

The team must take steps to make all persons involved in the initiative, from consortium leaders to teachers and students, responsible for the constant improvement of quality. This requires that team members be enthusiastic promoters of the initiative and become models of personal commitment to the team's efforts. It is particularly important for top-level institutional leaders to demonstrate their commitment to Tech Prep by modeling a team approach.

In addition, the institutional environment must be such that employees have confidence in their abilities to contribute to the effort and have the motivation to adopt the goals of the Tech Prep team as their own. It may be up to the team to modify the institutional environment, if necessary, to ensure these conditions.

Supportive atmosphere

Development of an attitude of trust within the team and the organization is vitally important. This supportive atmosphere can be nurtured throughout the organization by emphasizing

- mutual understanding,
- tolerance and acceptance of individual differences, and
- risk-taking (Berg, 1991).

Effective communication is a basic requirement for the success of an initiative. Members of a team must value honest, direct, and open communication so that ideas flow freely and important information is shared.

Continued on next page

Effective communication

The quality approach to teamwork necessitates the common understanding of quality and of quality goals by all involved. Such an understanding can only be achieved through effective communication. Examples of communication methods employed by teams are

- newsletters.
- election of advisors.
- routinely scheduled meetings.

The institutional environment must support such communication and provide an atmosphere conducive to active listening and free expression of ideas. In addition, use of formal groundrules, team processes, and tools assist in establishing good communication among team members. (Chapter 8 provides an extensive discussion of how quality tools can be applied to Tech Prep.)

Manage conflict

An ability to manage conflict constructively is absolutely essential to the success of the team. Open communication allows the expression of disagreement and a sharing of a diverse set of perspectives. Cooperative relationships among team members are enhanced by well-managed disagreement (Berg, 1991). Training in how to manage conflict, along with other concepts related to small group process, is critical to enabling a team to work effectively.

Ongoing assessment

Finally, it is important to establish an ongoing assessment of the group process. Team members need to have input into a process of assessment to let all members know how they are doing and how they can improve. Such a process must

- allow teams to accumulate positive as well as negative experience by practicing teamwork and learning from successes and failures alike.
- encourage self-observation and observation of other successful teams in order to experiment with time-tested techniques and learn new ones.
- employ formal evaluation procedures conducted by experts in teamwork.
- compare team outputs to goals and missions.
- permit and encourage changing leaders, adopting new processes and tools, acquiring training, and making other changes as required in response to persistent problems.
- provide opportunities for rewarding teams for accomplishments and for celebrating successes (Bragg, 1992).

By keeping these strategies active in a process of ongoing assessment, teams learn how to improve their work and, thus, their organizations.

How to Build Tech Prep Teams

Understand context

Members of a Tech Prep team should have an understanding of the context in which the team operates in order to function as effectively as possible. As with individuals, groups do not lead an isolated existence. The context in which the team operates includes its history, its future expectations, its structure and purpose, and its relationship with other teams within the consortium (Worchel, Wood, & Simpson, 1992).

For teams responsible for planning and implementing Tech Prep, a knowledge of the history of the scope of the effort is important. The team is part of a hierarchy of educational organizations within the state, and part of a network of similar teams across the country.

Future expectations differ from state to state and from consortium to consortium. In some cases, Tech Prep is part of a larger reform effort; in others it is seen as a first step towards further, hoped-for reforms.

Tech Prep teams

Teams can be organized in many ways and for several purposes for Tech Prep (Bragg, 1991). Four types of teams appear to be important to achieving success in planning and implementation.

Team	Persons Involved
Executive Leadership Teams	• College Presidents • School Superintendents • Board Presidents • Community/Business Leaders
Management Leadership Teams	• College Administrators, Faculty, and Staff • School Administrators, Faculty, and Staff • Community/Business Leaders
Process Management/ Implementation Teams	• Secondary and Postsecondary Administrators, Faculty, Counselors, Students, and Parents • Community/Business Representatives
On-site Planning/ Implementation Teams	• Administrators • Faculty and Counselors • Students and Parents • Community/Business Representatives

Continued on next page

Team Problem Solving

A problem-solving process

Adopting an attitude that views problem identification as an opportunity for improvement is consistent with TQM philosophy. Accomplishing the work of the Tech Prep team is essentially a problem-solving process. To aid in that effort, the teams' work must follow a systematic approach to finding solutions.

Scholtes (1988) has developed fourteen improvement strategies to help teams accomplish quality-related goals. The framework designed is intended to simplify the planning process. It divides improvement planning into three categories, each with specific strategies for attaining quality results. The strategies are organized in a sequential format.

Establish a Scientific Approach		
Step	**Strategy**	**Components**
1	Collect meaningful data	Avoid collecting the wrong or biased data by clarifying goals, developing operational definitions and procedures, and planning for consistency.
2	Identify root causes	Avoid jumping to conclusions by gaining consensus on the problem and its potential causes.
3	Develop appropriate solutions	Avoid incomplete or temporary problem solving by describing needs, defining goals, identifying constraints, generating and evaluating alternatives, and selecting the best overall solution.
4	Plan and make changes	Avoid unnecessary difficulty in the change process by developing awareness among leaders and implementing a planning tool.
Identify Improvement Needs		
5	Identify customer needs and concerns	With the goal of exceeding customer expectations, speculate about results, plan and collect information, analyze results, and check validity before taking action.
6	Study the use of time	In order to maximize people's time, study the design, data collection, and analysis components for improvement needs. This step is particularly important for administrative and service processes.
7	Localize recurring problems	To learn exactly when and where problems occur, first define them, assess their impact, localize them, and discuss conclusions with key stakeholders.

Continued on next page

A problem-solving process (continued)

Improve a Process		
Step	**Strategy**	**Components**
8	Describe a process	In order to develop a current description of the process, set boundaries, apply it to a flowchart, diagram physical work flow, check results, and improve, as necessary.
9	Develop a standard process	With a goal of eliminating variation, study the best practice; plan a test of the process. Execute, monitor, and revise the test before expanding it as the new standard. Maintain documentation.
10	Error-proof a process	As a preventative measure, identify mistakes at each step, question methods to attain less errors, and restructure the work environment to accomplish process improvement.
11	Streamline a process	In order to reduce cycle time, examine the value of each step, reduced inventories, and monitor improvements as changes are made.
12	Reduce sources of variation	Beginning with the most obvious sources of variation, evaluate, then eliminate components. Use gained knowledge in further studies.
13	Bring a process under statistical control	In order to identify hard-to-find variations, make plans for and begin charting information. Look for and eliminate causes of variation. Make plans for continuous improvement.
14	Improve the design of a process	To improve a process, experimentation may be needed. Set goals for an experiment, choose what to measure; design, prepare for, and execute the experiments; analyze and put the results into action.

Continued on next page

Summary

Implications for Tech Prep

Teamwork is increasingly required of students; but it is absolutely demanded of those involved in Tech Prep. Since teams are a vital component of TQM, methods borrowed from that approach can help ensure successful implementation of Tech Prep.

Well-chosen leadership is another crucial ingredient of a successful Tech Prep team, since good leaders will focus the team on its objectives. The process of building and maintaining productive teams is central to Tech Prep initiatives.

An understanding of the different types of teams utilized in Tech Prep efforts will facilitate quality improvement efforts. Clearly, the vehicle for implementation of Tech Prep must be team-driven solid quality improvement strategies.

References

Aguayo, R. (1990). *Dr. Deming*. New York, NY: Carol.

Aubrey, C. A., & Felkins, P. K., (1988). *Teamwork: Involving people in quality and productivity improvement*. Milwaukee, WI: Quality Press.

Berg, D. H. (1991). *Building team commitment to quality*. Lancaster, PA: Wentworth Publishing Company.

Bragg, D. (1991). *Illinois Tech Prep planning strategies*. Springfield, IL: Illinois State Board of Education.

Bragg, D. (1992). Team basics: How to develop teamwork in training organizations. *Performance and Instruction, 31*(9), 10-14.

Commission on the Skills of the American Workforce (1990). *America's choice: High skills or low wages!* Rochester, NY: National Center on Education and the Economy.

Heron, J. (1989). *The facilitators' handbook*. New York, NY: Kogan, Page, London/Nichols Publishing.

Kinlaw, D. (1991). *Developing superior work teams*. Lexington, MA: D. C. Heath and Company.

Quinlivan-Hall, D., & Renner,V. P. (1987). *In search of solutions*. Vancouver, BC, Canada: Training Associates Limited.

Scholtes, P. (1988). *The team handbook*. Milwaukee, WI: Joiner Associates, Inc.

Secretary's Commission on Achieving Necessary Skills (1991). *What work requires of schools: A SCANS report for America 2000*. Washington, DC: U.S. Department of Labor.

Worchel, S., Wood, W., & Simpson, J. A. (1992). *Group process and productivity*. Newbury Park, CA: Sage Publications.

Chapter 8

How to Use Group Processes and Quality Tools

James D. Layton

Overview

Background

In the initial stages, a Tech Prep team establishes a common purpose and goals and becomes comfortable working together. With time and the application of group techniques, the tools of TQM can be applied to problem-solving and quality improvement processes. When mature, a team is characterized by

- mutual respect.
- the ability to listen and communicate.
- the ability to manage conflict and disagreement.
- the ability to delegate responsibilities.
- the capacity to accomplish its goals.

Common tools

Group techniques and quality tools introduced in this chapter are some of the most common used in TQM. The information provided here is meant to be an introduction only. To use the tools, we refer you to the resources listed with each tool and at the end of the chapter.

In this chapter

The TQM tools examined in this chapter follow.

Tool	See Page
Brainstorming	8-2
Multivoting	8-5
Nominal Group Technique	8-8
Consensus	8-12
Cause and Effect	8-14
Barriers and Aids	8-18
Action Planning	8-21
Needs Analysis	8-23
Survey	8-25
Focus Groups	8-28
Benchmarking	8-31
Other TQM Tools	8-33
Computer-Assisted Group Techniques	8-34
References	8-35

Brainstorming

Description

Brainstorming is a group process that can be used to produce a large number of ideas in a short time. There is no immediate concern for quality. Rather, the focus is on quantity and creativity. It is important as the initial step in almost any group process.

When to use

Brainstorming is the most common group tool. It can be used in the beginning stages of any group process as a data gathering or problem-solving technique. It is appropriate for any of the eight essential prerequisites for TQM described in this guidebook.

Benefits

Brainstorming is an effective method for

- encouraging creativity.
- fostering participation of all group members.
- encouraging the non-structured generation of ideas.
- allowing for diverse individuals with varying status to contribute equally to the group process.

Rules

During a brainstorming session, the following rules should be adhered to:

- Do not allow censoring, criticism, or lengthy discussion of ideas.
- Promote the development of ideas by hitchhiking or piggy-backing (i.e., building on someone else's idea).

Continued on next page

Procedure Follow these steps to conduct a brainstorming session:

Stage	Step	Action
Generation of ideas	1	Identify and display the purpose of the brainstorming session.
	2	Generate ideas by either allowing • each person to contribute an idea in sequence (round robin style), where passing is permissible • or by allowing spontaneous expression.
	3	Write ideas produced on flipcharts or easels. Note 1: These should be easily seen by team members. Note 2: Ideas must be written exactly as expressed.
	4	Continue until all the members forfeit a turn.
Clarification of ideas	5	Check to see that there is a common understanding of each recorded idea.
	6	Clarify ideas that are not clearly understood.
Evaluation of ideas	7	Review recorded ideas to remove duplicates or inapplicable ideas.
	8	Use additional tools such as multivoting or nominal group technique to further eliminate ideas.

Continued on next page

Brainstorming, continued

Practical applications to Tech Prep

A critical component of Tech Prep is the integration of vocational and academic subject matter to create a more applied educational approach. Brainstorming is a tool that could be applied to facilitate curriculum integration. By brainstorming ideas for linking existing or new vocational and academic subjects, faculty could begin to see how a more integrated curriculum could evolve. A team brainstorming exercise could focus on

- what subjects to integrate.
- how subjects can be taught to facilitate integration.
- who could be involved in developing or teaching integrated curriculum.
- why curriculum integration is important.

Resources

Recommended resources on brainstorming follow:

Authors	Title	Year
Kinlaw	*Developing superior work teams*	1991
Scholtes	*The team handbook*	1988

Multivoting

Description

Multivoting is a group tool that uses a series of votes to reduce and prioritize a list with a large number of items generated through brainstorming. Typically, two to four rounds of voting are conducted to create a short list of ideas for further action. The result is a smaller, more usable list, usually three to five items. It is not a final stage decision-making technique.

When to use

Multivoting is useful after a brainstorming session has produced a long list of ideas that cannot be used without some elimination. It is an aid in accomplishing this reduction quickly, with agreement from most of the team.

Benefits

This technique is helpful in reducing the attachment of individuals to their contributions. It provides an easy means of determining ideas that are more or less popular to members of the team, in relatively quick fashion. It provides an excellent method for facilitating consensus by honing down ideas perceived to be most critical to the team.

Procedure

The actual procedure used in multivoting depends on the number of items, the number of participants, and the number of remaining items desired. There are variations in the process described here, such as allotting a limited number of votes in the beginning and allowing them to be used whenever the voter wants. Another approach is to allow participants to vote for as many ideas as they wish, but permit only one vote per idea. With this approach, voting could not use all of their votes on one idea.

Continued on next page

Multivoting, continued

Procedure
(continued)

One multivoting procedure we find easy to use follows:

Step	Action
1.	Determine a voting process based on the number of ideas and number of participants. Example: If there are 100 ideas and 10 participants, ask each member to vote for 10 ideas.
2.	Start voting with a list of ideas produced by brainstorming.
3.	Conduct voting using one of these methods: • a show of hands • ballot • Post-It® notes Note: To use Post-It® notes, each participant is given a number of Post-It® notes equal to the number of votes allowed. The ideas are written on flip-chart sheets, attached to the wall, and voted on by having each voter place a Post-It® on the paper by their preferred ideas.
4.	Count the votes and record the number next to the idea.
5.	After setting a cut-off number, circle or otherwise indicate those ideas that have more votes than the agreed upon cut-off.
6.	Before the second vote, count the indicated ideas. Then, each member is allowed to vote a number of times equal to one-half the number of indicated ideas.
7.	Continue the voting process until the list consists of three to five items.
8.	The group can continue to analyze, reduce, and prioritize the ideas on this list if desired. Note: It is not advisable to multivote down to one item, as this may not facilitate enough discussion to reach consensus.

Continued on next page

Practical applications for Tech Prep

Continuing with the curriculum integration example given in the previous section on brainstorming, multivoting could be applied to curriculum integration as well. Once the list of ideas regarding what subjects to integrate is obtained, the next step is to decide where to start. Which subjects should be integrated first? A team could decide to multivote a long list of ideas down to three to five as a way of focusing resources on the highest priority curriculum integration ideas.

Resources

Recommended resources on multivoting follow:

Authors	Title	Year
Scholtes	*The team handbook*	1988
Aubrey & Felkins	*Teamwork: Involving people in quality and productivity improvement*	1988

Nominal Group Technique

Description

Nominal Group Technique (NGT) is a group method used to produce ideas, identify problems, explore solutions, establish priorities, and work toward or arrive at consensus. Anonymous voting is the major feature of this process, which requires the group to assign weighted values to ideas based on rankings done by the group.

NGT has been shown to be a useful tool when used with groups composed of very diverse individuals (Moore, 1987). Due to the use of a specific set of steps, Kinlaw (1991) recommends the use of a facilitation. This individual is particularly helpful when members of the group have very different viewpoints and consensus may be difficult to reach.

When to use

NGT is used when it is necessary to

- neutralize status differences among members.
- eliminate the effects of a verbally dominant team member.
- allow for diversity among group members.
- gain consensus.

Some or all of these conditions may exist when the group first meets and begins to work. Sometimes conditions persist, making NGT, along with brainstorming, a group tool that is used routinely.

Benefits

NGT creates a sense of ownership by permitting all members of the group to participate equally and to the best of their abilities. NGT has a number of benefits including

- the production of a large number of ideas.
- the pooling of individual ideas.
- the elimination of overbearing behavior among team members of varied status or organization levels.

Continued on next page

Nominal Group Technique, continued

Procedure Follow these steps to use NGT:

Step	Action
1	Identify and display the purpose of the session on an easel or flipchart.
2	Have each participant silently write responses to the stimulus question or idea.
4	Request each participant's ideas one at a time. Note: participants are permitted to pass.
5	Assign an alphabetical character code to each idea.
6	Record the idea along with any variations on the easel or flipchart using the exact words of participants.
7	Continue this process until all participants ideas have been exhausted.
8	Clarify each idea by asking for comments, questions, and specific examples that bring out the meaning and logic of the idea. Note: If clarification of an idea is necessary, the person who originated the idea or another participant may do it.
9	Ask participants to rank-order the ideas silently based on their importance. This may be done by a. selecting the five most important ideas, b. writing each idea in the center of a note card with its accompanying alphabetical character codes, and c. ordering these cards by first choosing and numbering the most important as 5, then the next most important as 4, and so on until all are ranked.
10	Collect and shuffle the cards so that anonymity of ideas is preserved.

Continued on next page

Nominal Group Technique, continued

Procedure
(continued)

11 Tally the rank orderings by recording the number of times each idea was chosen as first, second, third, and so on. The following table illustrates how to tally the ideas.

Idea	First choice	Second choice	Third choice	Fourth choice	Fifth choice
A	III	I	II		I
B	I	I	II		I
C	I	I	II	IIIII	II
D	I	II	I		I
E		II		I	II

Note: Example assumes 5 ideas for NGT.

12 Give each idea a weighted value based on its rank. Do this by giving each column a multiplier, with the first choice column multiplier equal to the number of ideas being ranked, the second idea one less, and so on.

13 Add the total points for each idea and display. The following table illustrates how to total the ideas.

Idea	First choice (× 5)	Second choice (× 4)	Third choice (× 3)	Fourth choice (× 2)	Fifth choice (× 1)	TOTAL
A	III	I	II		I	26
B	I	I	II		I	16
C	I	I	II	IIIII	II	27
D	I	II	I		I	17
E		II		I	II	12

Continued on next page

Nominal Group Technique, continued

Procedure (continued)

14	Decide if further voting is necessary, based on point totals. For example, if two totals are close, a final vote between them may be needed.
15	Display the results and discuss reactions. When the team agrees with the results, the session concludes.

Practical applications to Tech Prep

Sometimes a site-based Tech Prep team contains members representing very diverse views and having different types of roles (e.g., principal, counselor, teacher, student). To facilitate group process, NGT could be used to choose curriculum areas for developing articulation agreements, integration, or work-based learning processes. The silent generation and ranking of ideas could move the group forward to choosing top-ranked curriculum areas relatively quickly and with a minimal amount of controversy.

Resources

Recommended resources on NGT follow:

Authors	Title	Year
Kinlaw	*Developing superior work teams*	1991
Moore	*Group techniques for idea building*	1987
Scholtes	*The team handbook*	1988

Consensus

Description

A consensus decision is one that all the members of the group have decided is the best, and can be supported by all. This means that some compromise and collaboration will be necessary, but the group as a whole stands behind the choice. According to Scholtes (1988), consensus is not

- a unanimous vote because the final decision may not be the top priority of all.
- a majority vote which often results in a few individuals being forced to accept a decision they do not want.

When to use

Consensus is useful whenever a group must agree on and support a decision with one voice. It is most easily used in a relatively small, homogeneous group in which minimal status differences exist among members. It is necessary for participants to know the issues before the session, and there should be time to consider opinions and alternatives. Good communication skills in listening, speaking, and conflict resolution are important.

Benefits

In contrast to other group techniques that use voting to reach an agreement, in consensus the group does not act without agreement from all members. It thus gives everyone a chance to express opinions, thoughts, and feelings about alternatives, and to be involved in the final decision.

Consensus is an extremely valuable team-building tool, which

- builds team spirit while permitting the airing of personal feelings.
- encourages the resolution of differences and disagreements.
- requires active listening to others' opinions.
- emphasizes the importance of each person's contributions.

Continued on next page

Procedure (continued)

Follow these steps to work toward consensus:

Step	Action
1	Present the issue or problem to the group. If necessary, let the group undertake the definition or redefinition of the issue or problem.
2	Use brainstorming to produce a list of possible solutions to the problem or ideas that address the issue.
3	Guide the group through the steps of clarification and evaluation. Focus on the issue, guiding the group towards generating ideas or solutions that are usable.
4	Manage the discussion and ensure that one or two participants do not dominate the others and that the members voice all opinions.
5	Make sure that the group discusses all contributions until they reach consensus, which may be verified verbally or by a show of hands.
6	If a particular issue resists consensus, either repeat the process or use another group process such as multi-voting or NGT to facilitate consensus.

Practical applications to Tech Prep

Consensus is a tool that should be used rountinely by Tech Prep teams. It can be applied when nearly any decision needs to be reached. It can be used when decisions need to be made about any important Tech Prep process. It ensures that each team member's opinions count and facilitates a cooperative spirit among all participants. Use of consensus eventually yields greater commitment to and ownership of Tech Prep by all stakeholders.

Resources

The following resources are recommended on consensus:

Authors	Title	Year
Brilhart	*Effective group discussion*	1986
Scholtes	*The team handbook*	1988

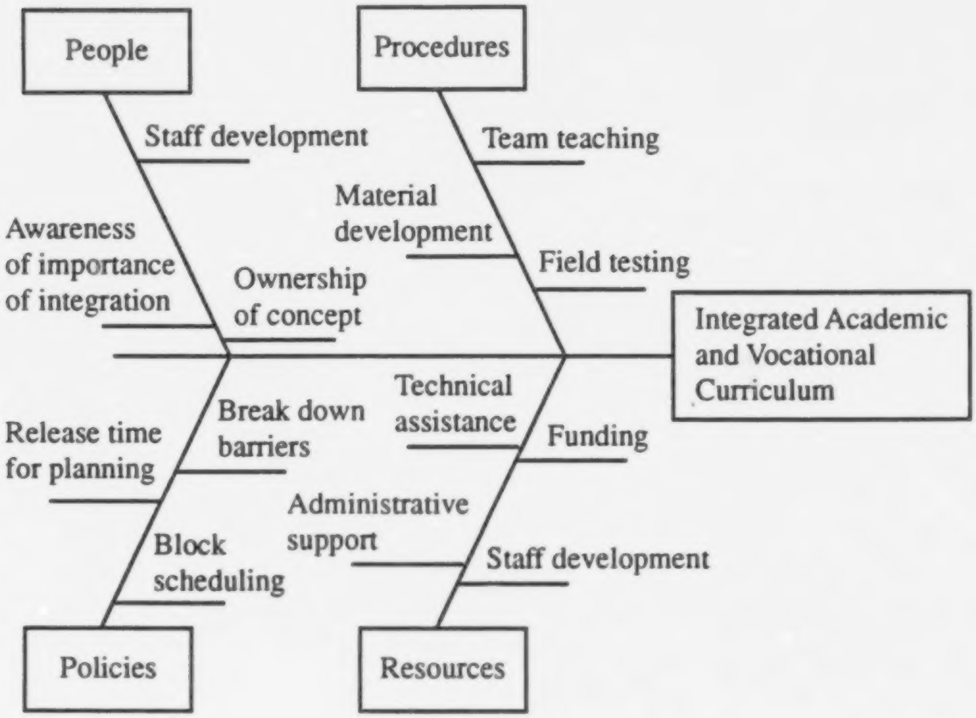
Cause and Effect

Description

A cause-and-effect diagram (also known as a fishbone diagram, from its shape) is a visual representation of the relationship between a problem or an effect and its causes. For each effect, there are probably several possible causes; these causes are categorized and are visually demonstrated to be connected to the problem. The classic categories of causes are materials, methods, machines, and people; in education, these may be seen as resources, procedures, policies, and people. It is important to select these categories based on the problem; even more than four categories of causes are possible.

The following cause and effect diagram illustrates ideas associated with a probl em related to integration of vocational and academic curriculum, an important component of Tech Prep.

Cause and Effect Diagram


People
Staff development
Awareness of importance of integration
Ownership of concept
Procedures
Team teaching
Material development
Field testing
Integrated Academic and Vocational Curriculum
Release time for planning
Break down barriers
Block scheduling
Policies
Technical assistance
Funding
Administrative support
Staff development
Resources

Continued on next page

Cause and Effect, continued

When to use

The cause-and-effect diagram is used to establish the possible causes of a well-defined problem. The diagram provides a pictoral display that illustrates complex situations in a way that permits better understanding.

The process of designing a cause-and-effect diagram

- encourages the systematic and organized analysis of numerous potential causes, and
- encourages contributions from the entire group.

Benefits

The diagram

- is simple to produce,
- visually represents potential causes, classified into various groups,
- keeps the group's concentration on the problem, and
- assures that all the causes of a problem or effect will be identified, not only the most apparent.

Continued on next page

Cause and Effect, continued

Procedure
(continued)

Follow these steps to produce a cause and effect diagram.

Step	Action
1	Select and display the problem or effect, which should be defined as precisely as possible.
2	Construct the lines of the diagram and put the problem or effect in the effect box.
3	Determine and identify the major groups of causes. These usually include, but are not limited to, resources, procedures, policies, and people.
4	In a brainstorming session, identify all possible causes of the problem or effect.
5	Identify the best ideas generated during brainstorming by using discussion and a voting process. Careful consideration of all aspects of a cause is necessary in this process.
6	Identify the most probable causes by voting and rank order them. Use multivoting or NGT to facilitate this step.
7	Attempt to verify the most probable causes.
8	Take action to resolve the problem.

Practical applications to Tech Prep

Illustrated at the beginning of this discussion about cause and effect, is a diagram focused on an effect labeled "integrated academic and vocational curriculum." In this case, a team is examining contributing factors to a problem with integrated curriculum. Some of the potential causes identified by the group involve awareness, breakdown of barriers, release time, and staff development. A likely next step for this team would be data gathering to determine the root cause(s) of the problem. Once this root cause is selected, the team can begin to identify solutions and work toward remedying the problem.

Continued on next page

Practical applications to Tech Prep (continued)

A cause-and-effect diagram can be created by a Tech Prep team that is attempting to resolve any type of problem. The cause-and-effect tool could be applied to common problems such as the following:

- apathy toward change
- lack of support from school, business, or community leaders
- lack of awareness of Tech Prep outside the traditional vocational education arena

The cause-and-effect tool could enable the team to brainstorm reasons for these problems and help it focus on strategies for resolving these problems.

Recommended resources on cause and effect follow.

Authors	Title	Year
Ackerman, et al.	*Process quality management and improvement guidelines*	1987
Aubrey & Felkins	*Teamwork: involving people in quality and productivity improvement*	1988

Barriers and Aids

Procedure

Barriers and aids (also known as force field analysis) is a graphic technique used to identify and analyze restraining elements (barriers) that resist change, and driving forces (aids), that enable change.

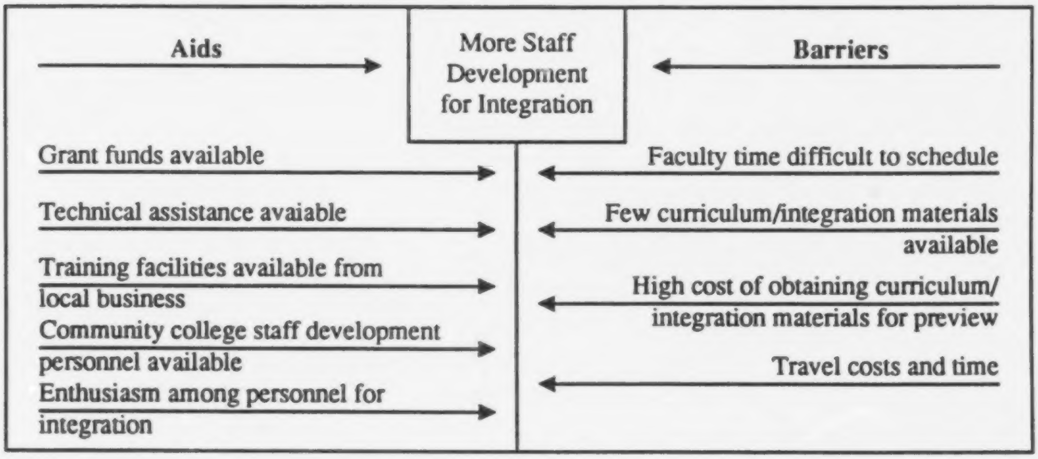
When to use

Barriers and aids is used when a problem has been identified and clearly defined, its causes are known, and a solution is being considered. When a change is planned or a new program is implemented, barriers and aids can be helpful by demonstrating how putting a solution into action can have a positive or negative effect on a situation.

Barriers and aids is a logical extension of constructing a cause-and-effect diagram, where potential causes of a problem have been identified. For example, using the cause-and-effect diagram on pages 8-15 of this chapter, a group may have verified that not having sufficient staff development inhibited the integration of vocational and academic curriculum. The team could focus on this particular problem to eliminate barriers and enhance aids to attempt to improve integration. The following barriers and aids diagram illustrates a brainstormed list of ideas associated with this problem.

Benefits

When barriers and aids have been identified, high-priority aids can be applied to barriers that prevent implementation of a solution. The team can focus on strategies to enhance the impact of aids. At the same time, strategies can be planned to reduce the magnitude of or eliminate barriers. By enhancing aids and removing barriers, a team can resolve problems.


Aids
More Staff Development for Integration
Barriers
Grant funds available
Technical assistance avaiable
Training facilities available from local business
Community college staff development personnel available
Enthusiasm among personnel for integration
Faculty time difficult to schedule
Few curriculum/integration materials available
High cost of obtaining curriculum/integration materials for preview
Travel costs and time

Continued on next page

Barriers and Aids, continued

Procedure

Follow these steps to use barriers and aids:

Step	Action
1	Identify the change or potential solution being considered.
2	Use brainstorming to generate a list of restraining forces (barriers) that affect the planned implementation.
3	Use a similar process to generate and list driving forces (aids) that will positively affect the planned implementation.
4	Have the group make a consensus decision about the strengths of the brainstormed barriers and aids by ranking the items as high, medium, or low.
5	Match each aid with a counterpart barrier of equal or lower rank where possible.
6	Make a list of the barriers and aids that are remaining.
7	Brainstorm possible aids, for those barriers that cannot be matched with an existing aid.
8	Identify barriers that have a higher ranking than their counterpart aids. Important: Take immediate action to eliminate these barriers.
9	Generate an action plan to increase the effect of the aids and decrease the effect of remaining barriers.

Continued on next page

Practical applications to Tech Prep

Illustrated at the beginning of this discussion about barriers and aids is a diagram focused on the goal of providing more staff development for integration. This diagram could have been developed by a team that was seeking approaches to increase staff development to facilitate curriculum integration in its consortium. By laying out the potential barriers and aids related to this goal, the team can more realistically develop a plan for staff development and measure whether it facilitates curriculum integration.

Resources

Recommended resources on barriers and aids follow:

Authors	Title	Year
Ackerman, et al.	*Process quality management and improvement guidelines*	1987
Barra	*Putting quality circles to work*	1983

Action Planning

Description

The action plan is an organized list of activities that are necessary for implementing a program or the solution to a problem. It should identify key participants and processes in the implementation. It should answer the basic who, what, where, how, and when questions.

When to use

The action plan is used when the decision has been made to implement a program or solution. A typical action plan is structured around the following categories: actions, persons responsible, resources required, and dates actions are to begin and be accomplished.

Benefits

It provides a map for the implementers of a program to follow and a method of checking that all needed actions are planned for and accomplished.

Procedure

Follow these steps to use action planning:

Step	Action
1	Divide the proposed implementation into steps, actions, or phases and record them.
2	Identify and record needs involved with each active step or phase. These include resources, people, and materials.
3	Use a brainstorming process to make sure that all needs have been considered and taken into account.
4	Assign dates for when actions are to begin and end.
5	Modify the list as necessary and continue updating as required.

Continued on next page

Action Planning, continued

Practical applications to Tech Prep

Action planning is another extremely valuable tool for a Tech Prep team. It can be used to formalize actions, responsibilities, and target dates for any aspect of Tech Prep planning and implementation. For example, an action plan could be developed by a team involved in marketing Tech Prep and recruiting students for the program. This team could use an action plan to document who, what, when, where, and how, related to the following kinds of activities:

- sending literature to students and parents
- scheduling counseling meetings for students and their parents
- finalizing course schedules for students
- updating school and college publications with program information

Resources

The following are recommended resources on action planning:

Authors	Title	Year
Ackerman, et al.	*Process quality management and improvement guidelines*	1987
Pfeiffer, Goodstein, & Nolan	*Shaping strategies planning*	1989

Needs Analysis

Description

Needs analysis is a tool for making decisions about the adequacy or inadequacy of a program or service currently being provided. It can be used to assess the demand or lack of demand for a program or service being planned. It can also be used to assess the level of demand for a new program or service.

Needs analysis encompasses needs identification, which is the process of identifying and classifying needs, and needs assessment, which is a process of evaluation of problems and solutions that have been identified for a specific population. The process of assessment goes beyond needs identification to make judgements about problems and solutions.

When to use

Needs analysis is used when the team is making decisions in planning, resource allocation, delegation of responsibilities, or other early-implementation areas. It is most valuable at times when there is uncertainty about the best actions to be taken to meet identified needs in the planning and implementation of programs.

Benefits

Needs analysis helps to answer future-oriented questions. A needs analysis has a specific effect: it accomplishes the reduction of uncertainty in the work of a team. It establishes a foundation on which the team can build future plans and programs.

Continued on next page

Needs Analysis, continued

Procedure (continued)

Follow these steps to conduct a needs analysis:

Step	Action
1	Identify users and their uses of the program or service.
2	Describe these users and other target populations and the program/service environment.
3	Identify and describe needs, which are often viewed as the gap between "what is" and "what should be."
4	Specify and list these needs in a format for assessment by users and other target populations.
5	Assess the importance of the identified needs.
6	Communicate the results of the analysis to participants in the planning process.
7	Use the results by focusing planning and implementation on high priority needs.

Practical applications to Tech Prep

A needs analysis is typically conducted to determine which program areas should be the focus of Tech Prep. Often these decisions are made based on labor market data showing high-growth employment opportunities for a region or state. However, needs analysis could be conducted for other reasons, such as to help focus curriculum on student needs. To collect information about student needs the following kinds of information should be collected:

- demographic characteristics
- employment experiences and needs
- educational experiences and needs
- developmental education and support service needs

Resources

A recommended resource on needs analysis follows:

Author	Title	Year
McKillip	*Need analysis: tools for the human services and education*	1987

Survey

Description

A survey is a tool for collecting information by phone, by mail, or in person. Information obtained from a survey is used to describe many phenomena (e.g., people, programs, products, outcomes).

When to use

We use a survey when we need to obtain information about a population that is unavailable from any other accessible source.

NOTE: Survey design and analysis is a complex procedure and may require consulting outside help. This brief discussion only introduces the survey tool and is not intended to be an exhaustive resource for conducting a survey.

Benefits

Data obtained by a survey are consistently measured and comparable for everyone in the survey.

Continued on next page

Procedure Follow these steps to conduct a survey:

Step	Action	Notes
1	Choose the sample.	If the population under scrutiny is small all should be surveyed. (This is actually a census, not a sample). Larger populations should be sampled using appropriate probability sampling methods.
2	Design the survey.	It is important that clear, standardized directions and questions are used to eliminate the effects of changes in wording, especially when the survey is conducted in person or over the telephone.
3	Pilot test the survey.	A pilot test of the survey should be conducted with a small percentage of the target audience in exactly the same manner planned for the final survey. This helps to identify potential problems with the survey and provides feedback to make improvements.
4	Administer the survey.	For this step, consideration must be given to training the researchers, especially those persons involved in phone or face-to-face interviewing.
5	Conduct follow-ups to ensure high response rate.	To obtain a high response rate necessary for generalizing survey findings to a population, follow-up procedures need to be followed. This procedure can entail sending a follow-up letter, mailing additional copies of the survey, and conducting follow-up telephone interviews.
6	Prepare data and conduct analysis.	This step ordinarily involves formatting and coding numerical data (i.e., making the information usable by computer programs that will be used to analyze it). For more subjective data, ideas are categorized and counted.
7	Report the findings.	Survey findings can be printed in extensive technical documents or brief executive summaries. The important question is who will need to use the findings and how much information do they need.
8	Use the survey results.	It is important to involve many other groups in using survey results. Findings should be disseminated widely to all who need them.

Continued on next page

Practical applications to Tech Prep

Surveys could be used to obtain information such as the following:

- Community and employer perceptions toward Tech Prep
- Community and employer satisfaction with graduates
- Student and parental attitudes toward Tech Prep
- Faculty interest in participating in Tech Prep

Resources

Recommended resources on surveys follow:

Authors	Title	Year
Aubrey & Felkins	*Teamwork: involving people in quality and productivity improvement*	1988
Dillman	*Mail and telephone surveys*	1978
Fowler, Jr.	*Survey research methods*	1988
Laurakis	*Telephone survey methods*	1987

Focus Groups

Description

A focus group is a carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, nonthreatening environment. Focus groups are generally composed of eight to ten people who are reasonably homogeneous, yet unfamiliar with each other.

When to use

We use a focus group to collect qualitative data that identifies trends and patterns in perceptions. Focus groups give us clues and insights into how a service, program, or opportunity is perceived.

Benefits

The focus group takes advantage of certain human tendencies. Surveys assume that people know how they feel about something. The focus group recognizes that people need to listen to the opinions of others before forming personal viewpoints.

Participants influence each other with their comments. Thus, opinions shift, and self-disclosure occurs more readily through the focus group format.

Continued on next page

Procedure Follow these steps to conduct a focus group:

Step	Action	Notes
1	Determine the purpose of the study.	The purpose can be determined by asking why it should be conducted, what types of information are particularly important, and who wants the information.
2	Determine whom to study.	To select focus group participants, consider the purpose and decide who can provide the necessary information. Keep the group to 8 to 10 participants. If more views are needed, conduct multiple focus groups.
3	Develop questions to be used in the focus group.	Begin with open-ended questions with a very general focus and narrow to more specific information. Dichotomous questions should be avoided.
4	Pilot test the focus group interview.	Try out the questions with colleagues. Make changes before the first focus group.
5	Conduct the focus group interview.	Carefully follow the procedures and questions developed for the interview. Note responses to the questions by taking notes or recording the session.
6	Analyze the findings.	Conduct analysis of participants' responses to the questions. Look for common themes as well as perceptions representing extreme points of view. How these data are analyzed depends upon the purpose of the focus group and how findings are to be used.
7	Refine the interview and continue with remaining groups, if needed.	Collect information from focus groups until various points of view are clearly represented. Resources must also be considered, as cost, time, and personnel can be high when conducting many focus groups.

Continued on next page

Focus Groups, continued

Practical applications to Tech Prep

Focus groups could be used by teams during the early planning stages. They could be conducted with groups of students, parents, employees, faculty, and other key stakeholder groups to ensure Tech Prep is developed to address their expectations. Focus groups could also be used when designing curriculum, marketing, or evaluating Tech Prep.

Resources

Recommended resources on focus groups follow:

Authors	Title	Year
Krueger	*Focus groups: a practical guide for applied research.*	1988
Stewart & Shamdasani	*Focus groups: theory and practice*	1990

Benchmarking

Description

Benchmarking is a quality improvement tool that measures the processes of an organization against those of recognized leaders. It seeks out those who are successful at implementing a process, studies the reasons for their successes, and applies lessons learned to the improvement of processes.

When to use

Benchmarking is used when there is a need to gather information on how specific processes lead to high quality outputs. This is an important part of the process of continuous quality improvement.

Benefits

We use benchmarking to gain insights into our processes, to provide information for program improvement projects, and ultimately to improve the quality of processes. By constantly and consistently looking for new ideas and methods that work the best, we can make our programs the best.

Procedure

Similarly to needs analysis, surveys, and focus groups, benchmarking is a complex evaluation process that can be approached in different ways. The following steps present a basic sequence of actions for benchmarking:

Step	Action
1	Identify and document a process that is critical to the mission and goals of the organization.
2	Identify those organizations that have achieved superior performance in the process being studied.
3	Quantify and measure the gap between their results and those of your own organization.
4	Learn how the application of the process leads to the high level of performance in the organization being examined.
5	Improve and change your practices to close the gap and eventually surpass the superior performer.

Continued on next page

Benchmarking, continued

Practical applications to Tech Prep

At this early stage, few exemplary Tech Prep initiatives exist. However, it is not impossible to see some early innovation in Tech Prep initiatives or to benchmark successful educational programs that utilize components of Tech Prep. The key to benchmarking is to define clearly the process of interest and find a partner that is successfully managing that process. Benchmarking could be applied to an entire Tech Prep initiative or, more likely, focus on processes that function as a part of Tech Prep. These processes include

- articulation.
- integration.
- partnerships.
- marketing.
- counseling.
- evaluation.

Resources

Recommended resources on benchmarking follow:

Authors	Title	Year
Bragg	*Benchmarking Tech Prep planning and implementation processes*	1992
Camp	*Benchmarking: The search for industry test-practices that lead to superior performance*	1988

Other TQM Tools

Description

Use of the TQM approach in business and industry entails the development and use of other tools in addition to the ones presented here. The reader is advised to consult cited resources for more information on the following techniques.

Tool	Description
Pareto diagram	• Named after the 19th century economist Vilfredo Pareto. • A graphical technique that results in a diagram based on the rank ordering of the possible causes of a given problem. • Is based on the 80/20 rule in which "the vital few" causes are responsible for "the trivial many" effects.
Flow chart	• Used to graphically depict the flow of information through a particular process with a standard set of symbols. • Aids in systematizing and clearly conceptualizing a process. • Depicts elements of the process including inputs, outputs, and activities.
Decision matrix	• Used for evaluation and assessment. • Helps to determine the relative impact of a problem or a potential solution. • Involves ranking problems and comparing solutions in a matrix format.

Resources

A recommended resource for these TQM tools follows:

Author	Title	Year
Scholtes	*The team handbook*	1988

Computer-Assisted Group Techniques

Computer-assisted group techniques

Many of the TQM tools introduced here lend themselves well to a new method made possible by computers, networks, and innovative software. Researchers have found that the use of so-called groupware with a roomful of networked PCs results in increased productivity for the collective work done by teams.

In a recent study conducted by Boeing, the time required to finish a wide range of team projects was reduced by an average of ninety-one percent (Kirkpatrick, 1992). Future enhancements promise to expand these types of systems by linking team members in different locations, thus improving the efficiency and speed of collaborative projects. These computer-assisted group techniques present many exciting opportunities for teams to use quality tools in all settings.

Advantages and disadvantages

These developments have clear advantages for Tech Prep teams attempting to meet and efficiently accomplish goals in what can be daunting circumstances. In many states the logistical difficulties of the distances separating team members make progress slower than it should or could be.

The disadvantage of these new approaches at present is the high cost of both hardware and software. Until costs come down, which is almost an inevitability, teams should investigate business and industry facilities in their areas to see if these systems are available for use. In some sites, Tech Prep initiatives have been able to use business and industry facilities and computer resources to enhance planning capabilities. By making contacts with business and industry in your area, doors may be opened to state-of-the-art computer capabilities for team work.

References

Ackerman, R., Coleman, R., Leger, E., & MacDorman, J. (1987). *Process quality management and improvement guidelines* Indianapolis, IN: Publication Center, AT&T Bell Laboratories.

Aubrey, C. A., & Felkins, P. K. (1988). *Teamwork: Involving people in quality and productivity improvement*. Milwaukee, WI: Quality Press.

Barra, R. J. (1983). *Putting quality circles to work*. New York, NY: McGraw-Hill.

Bragg, D. D. (1992, April). *Benchmarking Tech Prep planning and implementation processes*. Paper presented at the American Educational Research Association meeting in San Francisco, CA.

Brilhart, J. K. (1986). *Effective group discussion*. Dubuque, IA: Brown Publishers.

Camp, R. C. (1989). *Benchmarking: The search for industry best practices that lead to superior performance*. Milwaukee, WI: Quality Press.

Fowler, F., Jr. (1987). *Survey research methods*. Newbury Park, CA: Sage Publications.

Kinlaw, D. (1991), *Developing superior work teams*. Lexington, MA: Lexington Books.

Kirkpatrick, D. (1992, March 23). PCs: Here comes the payoff. *Fortune*, 93-102.

Krueger, R. A. (1988). *Focus groups: a practical guide for applied research*. Newbury Park, CA: Sage Publications.

Laurakas, P. J. (1987). *Telephone survey methods*. Newbury Park, CA: Sage Publications.

McKillip, J. (1987). *Need analysis: Tools for the human services and education*. Newbury Park, CA: Sage Publications.

Moore, C. M. (1987). *Group techniques for idea building*. Newbury Park, CA: Sage Publications.

Pfeiffer, W. J., Goodstein, L. D., & Nolan, T. M. (1989). *Shaping strategic planning*. Glenview, IL: Scott, Foresman and Company.

Scholtes, P. (1988). *The team handbook*. Madison, WI: Joiner Associates, Inc.

Stewart, D. W., and Shamdasani, P. N. (1990). *Focus groups: Theory and practice*. Newbury Park, CA: Sage Publications.

Chapter 9

How to Implement Tech Prep

Applying Juran's Prerequisites for Strategic Quality Management

Debra D. Bragg

Overview

Background

The goal of improving quality is at the heart of Tech Prep and TQM. Each initiative entails comprehensive change in the way education and business are conducted. Each provides a process for reform and continuous quality improvement. Furthermore, each contributes strategies for retooling America's workforce and increasing the country's economic competitiveness.

This guide provides information about Tech Prep and TQM by exploring ways these approaches are complimentary. The guide began with a brief historical perspective for Tech Prep, a discussion of Tech Prep within the broader context of secondary school reform, and information about how states and local consortia are initiating Tech Prep. These early chapters set the stage for the remainder of the guide's chapters which focused on how to use TQM and Tech Prep, in parallel, to improve education.

In this chapter

This final chapter summarizes the guide and provides a synthesis of an approach to implementation of Tech Prep by applying eight essential prerequisites for strategic quality management espoused by Juran (1990). Discussion of each prerequisite includes goals, planning activities, team roles, tools, and outcomes.

This chapter summarizes the following topics:

Topic	See Page
Gain Support from Leaders for Tech Prep	9-2
Create a Shared Quality Vision and Policies to Support Tech Prep	9-3
Formulate and Prioritize Quality Goals for Tech Prep	9-4
Deploy the Goals of Tech Prep Throughout the Consortium	9-5
Provide the Needed Resources, Including Training	9-6
State Desired Outcomes and Establish Measures	9-7
Review Performance Regularly	9-8
Revise the Reward System	9-9
Summary of Eight Implementation Strategies	9-10
References	9-12

Gain Support from Leaders for Tech Prep

Goal and planning activities

Leaders from all segments of education, business, industry, labor, and the community are vital to the success of Tech Prep. Involvement by all of these groups is critical to formulating a vision, communicating and selling the concept, supporting the initiative with resources, and enabling people to contribute to Tech Prep.

Team roles

The role of four essential teams follow.

Team	Role
Executive leadership	Assume ultimate responsibility for organizational contributions to the consortium.
Management/project leadership	Coordinate communication and orientation efforts for the entire consortium.
Process management/ Implementation teams	Facilitate communication and participation across institutions in the consortium.
Site-based leadership teams	Facilitate communication and participation within own organization.

Tools

Tools that are useful at this initial stage of Tech Prep implementation are

- Consensus.
- Brainstorming.
- Multivoting.
- Focus Group.

Outcomes

Outcomes that can be expected from this first implementation strategy are

- leader commitment to planning and implementation,
- widespread understanding of the basics of Tech Prep, and
- early support and seeds for growing enthusiasm.

Create a Shared Quality Vision and Policies to Support Tech Prep

Goal and planning activities

A shared vision and supporting policies are essential for unifying people, creating enthusiasm, and instilling a common sense of importance for the Tech Prep initiative. The vision statement itself usually evolves from three simple questions:

- What is the future we seek?
- Why is that future important to us?
- How will we behave to carry out that future?

Team roles

The role of four types of Tech Prep teams follow.

Team	Role
Executive leadership	Lead consensus building to obtain a shared vision for Tech Prep.
Management/project leadership	Facilitate reaching consensus on a shared vision for Tech Prep.
Process management/ Implementation teams	Contribute to reaching consensus on a shared vision for Tech Prep and coordinate efforts to ensure organizational policies are consistent with the vision.
Site-based leadership teams	Contribute to reaching consensus on a shared vision for Tech Prep.

Tools

Some tools that are useful in creating a shared vision are

- Consensus.
- Brainstorming.
- Multivoting.
- Focus group.

Outcomes

There are two critical outcomes of this implementation strategy:

- A shared vision.
- Policies on a consortium-wide and participating-institution level to support the vision.

Formulate and Prioritize Quality Goals for Tech Prep

Goal and planning activities

The goals of a Tech Prep initiative may begin as a wish list generated by everyone involved. From this list, goals are formulated and consensus is reached on their priority. To be effective, quality goals should be stated in specific, quantifiable terms.

Team roles

Tech Prep teams can be instrumental in the goal-setting process as indicated below:

Team	Role
Executive leadership	Ensure all team members contribute to creating and prioritizing goals.
Management/project leadership	Manage consortium-wide goal-setting efforts.
Process management/ Implementation teams	Coordinate consortium-wide participation in goal-setting efforts.
Site-based leadership teams	Ensure institutional contribution to goal-setting.

Tools

Some of the tools that are critical to goal setting are

- Consensus.
- Brainstorming.
- Multivoting.
- Nominal group technique.

Outcomes

Outcomes of this implementation strategy are

- A set of goals obtained through consensus.
- Specific, quantifiable goal statements listed in priority order.

Deploy the Goals of Tech Prep Throughout the Consortium

Goal and planning activities

The purpose of deploying quality goals is to move the initiative from the early idea stage into the hands of people who can actually get it going. Site-based leadership teams, comprised largely of administration, faculty, counselors, students, employees, and other lay individuals, take primary responsibility for planning and implementing Tech Prep from this point on. Quality goals provide the basis for site-based teams to focus on quality improvement opportunities.

Team roles

Team roles that must be carried out during the deployment of goals follow.

Team	Role
Executive leadership	Support deployment by providing people, time, money, facilities, and technical assistance.
Management/project leadership	Coordinate deployment by supporting consortium-wide as well as site-based planning and implementation efforts.
Process Management/ Implementation teams	Provide leadership for goals that cross institutional boundaries (e.g., articulation, integration, partnerships, marketing, staff development, and measurement).
Site-based leadership teams	Manage critical processes such as articulation, integration, and instruction within own institution.

Tools

Tools that are critical to the deployment stage of Tech Prep are

- Needs Analysis.
- Benchmarking.
- Cause and effect.
- Barriers and aids.
- Action planning.

Outcomes

The outcomes of goal deployment are

- Clearly identified goals tied to a site-based planning structure.
- Progress on design and management of key processes linked to Tech Prep (i.e., articulation, integration, partnerships).
- Action plans prescribing how deployment will occur across the consortium and within sites.

Provide the Needed Resources, Including Training

Goal and planning activities

Tech Prep cannot be implemented effectively without a commitment of resources (e.g., people, time, materials, and facilities). While federal grant funds are key, they are usually not sufficient. It is important to redirect or commit state and local resources to ensure institutionalization of Tech Prep. Resources must be dedicated to

- establish the framework for the initiative;
- conduct joint training efforts involving secondary and postsecondary academic and vocational faculty, administrators, and counselors; and
- administer the initiative on a continuing basis.

Team roles

The ways each team can contribute to resource allocation follows.

Team	Role
Executive leadership	Allocate resources, monitor their usage, and support joint training efforts.
Management/project leadership	Design and facilitate resource allocation, and plan, coordinate and evaluate joint training.
Process management/ Implementation teams	Coordinate the use of resources, including training across the consortium.
Site-based leadership teams	Ensure effective use of resources within own institution, and plan, conduct, and participate in joint training.

Tools

Tools that can be used at this stage are

- Needs analysis.
- Benchmarking.
- Action planning.
- Survey.

Outcomes

Outcomes of resource allocation, including joint training, include

- Plans for resource usage.
- Plans for joint training.
- Evaluation data showing the effectiveness of resource usage and joint training.

State Desired Outcomes and Establish Measures

Goal and planning activities

The purpose of establishing outcome measures is to provide a clear and quantifiable means of determining

- the value of Tech Prep to students and other beneficiaries.
- the efficiencies gained by involving institutions in a consortium.
- the opportunities for quality improvement.

Team roles

Four types of teams play a role in measurement, as is indicated below.

Team	Role
Executive leadership	• Identify important institutional measures. • Allocate resources for measurement. • Review and use findings to improve processes.
Management/project leadership	• Coordinate measurement and reporting of results.
Process management/ Implementation teams	• Facilitate use of measurement for quality improvement and process management across the consortium.
Site-based leadership teams	• Use measurement to manage processes and improve quality within the institution.

Tools

At this stage, the following tools can be useful:

- Benchmarking.
- Survey.
- Focus groups.
- Nominal group technique.

Outcomes

The following outcomes can be expected at this stage:

- Documented outcome measures.
- Measurement activities carried out.
- Mechanisms for using measurement to manage processes and improve quality.
- Reporting mechanisms established for reporting measurement results.

Review Performance Regularly

Goal and planning activities

Ongoing performance review is vital to continuous improvement. These reviews should focus on determining the degree to which the quality goals and outcomes are being met. When problems arise, feedback should be provided to team members to ensure quality improvement.

Team roles

The roles Tech Prep teams can play in performance review follow.

Team	Role
Executive leadership	• Take responsibility for regular performance reviews. • Aggressively engage in efforts to improve processes by supporting an institution's participation in Tech Prep.
Management/project leadership	• Design and coordinate performance review and feedback processes.
Process management/ Implementation teams	• Ensure consortium-wide use of review and feedback processes.
Site-based leadership teams	• Engage in performance reviews by actively providing and receiving feedback with individuals in own institution.

Tools

Tools that can be useful at this stage are

- Benchmarking.
- Cause and effect.
- Survey.

Outcomes

Outcomes of performance reviews are

- Constructive feedback to team members enabling them to improve processes.
- Mechanisms of on-going, specific feedback to support continuous improvement of Tech Prep.

Revise the Reward System

Goal and planning activities

Reward and incentive systems currently in place reinforce existing philosophies and policies. Many of these counter new directions promised by Tech Prep. A new reward system should be designed to ensure the success of Tech Prep. It must motivate individuals and organizations representing the entire spectrum of stakeholders who invest in Tech Prep.

Team roles

The roles played by Tech Prep teams include the following:

Team	Role
Executive leadership	Take ultimate responsibility for the reward system and linking it to Tech Prep.
Management/project leadership	Design and coordinate rewards and recognitions for Tech Prep.
Process management/ Implementation teams	Coordinate rewards and recognition across the consortium.
Site-based leadership teams	Coordinate rewards and recognitions within own institution.

Tools

The following tools can be used at this stage:

- Brainstorming.
- Multivoting.
- Focus group.
- Survey consensus.

Outcomes

An important outcome of establishing a reward system for Tech Prep is

- Ongoing use of recognition and rewards that encourage continuous improvement of Tech Prep.

Summary of Eight Implementation Strategies

Strategy	Primary Goal	Planning Activities	Tools
Gain support from leaders.	Enlist the support of leaders at all levels to formulate and sell a vision for Tech Prep implementation.	• Identify personnel to contribute. • Assume responsibility for implementation. • Lead the process of implementation.	• Consensus • Brainstorming • Multivoting • Focus groups
Create a shared quality vision and policies.	Involve everyone in creating a shared vision for Tech Prep, along with organizations and personnel policies to support it.	Ask these questions: • What is the future we seek? • Why is that future important to us? • How will we behave when that future occurs?	• Consensus • Brainstorming • Multivoting • Focus groups
Formulate and prioritize quality goals.	Reach consensus on specific quantifiable goals to guide Tech Prep.	• Provide everyone with information. • Identify goal statements. • Rank goals. • Reach consensus on top goals. • Develop specific, quantifiable goals.	• Consensus • Brainstorming • Multivoting • Nominal group technique
Deploy the goals throughout the consortium.	Move the idea of Tech Prep into sites where it can be implemented by using process management/implementation teams and site-based teams comprised primarily of faculty.	• Create teams to carry out deployment. • Engage in process management and quality improvement efforts on site.	• Needs analysis • Benchmarking • Cause and effect • Barrier and aids • Action planning

Continued on next page

Summary of Eight Implementation Strategies, continued

Strategy	Primary Goal	Planning Activities	Tools
Provide needed resources, especially training.	Commit resources to ensure • A systematic approach to Tech Prep implementation. • Joint training to ensure continuous improvement.	Seven steps for joint staff development are 1. awareness 2. readiness 3. planning 4. collaboration 5. implementation 6. management 7. evaluation.	• Needs analysis • Benchmarking • Action planning • Survey
State outcomes and establish measures.	Provide clear and quantifiable measures for determining the value of Tech Prep.	• Ensure valid, reliable and useful measures. • Build on existing measurement systems. • Use qualitative and quantitative measures. • Build measures into quality improvement.	• Benchmarking • Survey • Focus groups • Nominal group technique
Review performance regularly.	Correct problems and ensure ongoing improvement.	Routine feedback should be • relevant • accurate • timely • specific • easy to understand.	• Benchmarking • Cause and effect • Survey
Revise the reward system.	Reinforce new philosophies and policies that are designed to make Tech Prep successful; link rewards to improved performance.	Create a reward system by • considering individual and organizational needs • identifying and prioritizing reward and recognition options • offering incentives and evaluating their effectiveness • revising and improving reward systems.	• Brainstorming • Multivoting • Survey • Focus groups • Consensus

References

Juran, J. M. (1990). U.S.A. quality: status and progress. *The BENT of Tau Beta Pi, Winter*, 25-28.

Appendix A: Fifty-State Survey Summary Results

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
AL	1,400,000	P(17)-26,000 I(8)-87,500 D(1)-150,000	1,145,000	P(11)-26,000 I(8)-87,500 D(1)-150,000	183,000	P(5)-26,000 I(7)-87,500	Dept. of Education	Ms. Carol Laughlin Curriculum Specialist Alabama Department of Education 50 N. Ripley Street Montgomery AL 36130 (205) 242-9108 Fax: (205) 242-9708
AK	111,600	P(2)-50,000	71,000	I(1)-71,000	126,000	P(2)-62,000	Dept. of Education	Mr. Ed Obie Director of Tech Prep Alaska Department of Education Goldbelt Pl, 801 W. 10th St Juneau AK 99811 (907) 465-4685 Fax: (907) 465-3436
AZ	900,000	P(12)- 50,000 min- 100,000 max	1,105,000	I(13)-70,000	145,000	P(3)-47,000	Joint: - Dept.of Education - State Board for Community Colleges	Mr. Dave Muehlbauer Program Improvement Director Arizona Dept. of Education 1535 W. Jefferson, 2nd Floor Phoenix AZ 85007 (602) 542-5352 Fax: (602) 542-1849
AR	650,000	P(12)-45,000	1,182,000	I(12)-98,000	43,000	P(1)-43,000	Dept. of Education, Vocational Technical Education Division	Ms. Kay Baker Tech Prep Coordinator Arkansas Dept. of Education 3 Capitol Mall, L. S. Hardin Bldg. Little Rock AR 72201-1083 (501) 682-1768 Fax: (501) 682-1509

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
CA	6,000,000	(Note: funds not released until January 1992) P(65)-49,000 D(6)-360,000	NA	P(65)-49,000 D(6)-360,000	9,000,000	NA	Joint: -Dept. of Education -Chancellor's Office of the Community College System	Mr. Chris Almeida Program Manager Industrial & Technical Education 721 Capitol Mall Sacramento CA 94244-2720 (916) 657-5425 Fax: (916) 657-5079
CO	840,000	P(12)-50,000	520,000	I(13)-40,000	200,000	P(4)-50,000	Colorado Community College and Occupational Education System	Mr. Larry Snell Director of Tech Prep CCCOES 1391 N. Speer Blvd., #600 Denver CO 80202-2554 (303) 620-4077 Fax: (303) 825-4295
CT	623,608	P(12)-25,000	700,000	I(12)-58,000	185,000	P(9)-20,000	State Dept. of Education	Ms. Valerie Dunn Director of Tech Prep Connecticut Dept. of Education 25 Industrial Park Road Middletown CT 06457 (203) 638-4060 Fax: (203) 632-1854
DE	136,411	P(1)-statewide grant with multiple participants	217,000	I(1)-217,000	NA	NA	Dept. of Public Instruction	Dr. Lewis Atkinson State Supt. of Curriculum Dev. Delaware Dept. of Public Inst. Townsend Bldg, P.O. Box 1402 Dover DE 19901 (302) 739-4681 Fax: (302) 739-3744

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
DC	108,445	P(1)-108,445	189,000	P(1)-189,000	NA	NA	State Office of Vocational and Adult Education	Ms. Judith Fredette Director of Tech Prep Penn Administration Unit 1709 3rd St. NE, 2nd Fl. Washington DC 20002 (202) 576-6308 Fax: (202) 576-7899
FL	2,830,000	P(11)-250,000	1,165,000	I(11)-150,000	1,200,000	P(6)-200,000	Dept. of Education	Ms. Louise Davison Dir. of Vocational Programs Florida Dept. of Education 1114 Florida Ed. Center Tallahassee FL 32399-0400 (904) 487-4439 Fax: (904) 487-0426
GA	1,800,000	P(36)-60,000	1,400,000	I(35)-40,000	1,315,000	P(24)-55,000	Joint: -State Board of Education -Dept. of Technical and Adult Education	Mr. Marvin Brown Dir. for Prog. Dev. & Innovation Georgia Department of Education 1760 Twin Towers East East Atlanta GA 30334-5040 (404) 656-2541 Fax: (404) 651-8984
HI	270,449	P(2)-135,000 Formula	628,000	P(1)-628,000 statewide grant with multiple participants (Formula)	NA	NA	Hawaii State Board for Vocational Education	Ms. Trude Pang Office of Admin. & Technology University of Hawaii 4303 Diamond Head Rd. Honolulu HI 96816 (808) 734-9140 Fax: (808) 734-9147

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
ID	314,000	P(6)-50,000 Formula	420,000	I(6)-70,000	NA	NA	Division of Vocational Education	Mr. Rob Campbell Director of Tech Prep Idaho Board of Education 650 W. State Street Boise ID 83720 (208) 334-3216 Fax: (208) 334-2365
IL	2,700,000	P(14)-43,000 I(17)-95,000	3,500,000	P(15)-90,000 I(17)-103,000	450,000	P(9)-50,000	Illinois State Board of Education	Mr. Jerry Ohare Program Manager State Board of Education 100 N. First Street Springfield IL 62777 (217) 782-4627 Fax: (217) 782-0679
IN	1,607,138	P(14)-25,000 base, plus 4,300 per partner (Formula) D(5)-state funded	2,070,000	P(14)-150,000	NA	NA	Indiana Commission on Vocational Technical Education	Ms. Linda Scheoff Director of Tech Prep In. Com. on Voc.& Tech. Ed. 325 W. Washington Street Indianapolis IN 46204 (317) 232-1814 Fax: (317) 232-1815
IA	750,000	P(6)-125,000	900,000	P(3)-150,000 I(3)-150,000	NA	NA	Dept. of Education, Bureau of Vocational and Technical Education	Mr. Vic Lundy Director of Tech Prep Iowa Dept. of Public Instruction Grimes State Office Building Des Moines IA 50319 (515) 281-4702 Fax: (515) 242-5988

---

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
KS	633,000	P(6)-80,000	780,000	I(6)-130,000	NA	NA	State Board of Education, Community College and Community Education Dept.	Ms. Jean Davis State Planner Kansas Department of Education 120 E. Tenth Street Topeka KS 66612 (913) 296-2222 Fax: (913) 296-7933
KY	1,178,844	P(21)- 25,000 min - 50,000 max	650,000	I(21)-35,000	260,000	P(20)-13,000	Dept. of Education, Dept. of Adult and Technical Education	Dr. Ahmed Sabie Director of Kentucky Tech Prep Kentucky Dept. of Education 300 Capitol Plaza Tower Frankfurt KY 40601 (502) 564-4286 Fax: (502) 564-5316
LA	1,359,437	P(9)-150,000	1,170,000	I(9)-130,000	300,000	P(4)-75,000	Dept. of Education, Office of Vocational Education	Ms. Connie Buck Director of Tech Prep Louisiana Dept. of Education Capitol Station - Box 94064 Baton Rouge LA 70804-9064 (504) 342-3503 Fax: (504) 342-7856
ME	338,366	P(3)-90,000	330,000	P(3)-100,000	170,000	P(2)-85,000	Maine Technical College System	Mr. Gary Crocker Statewide Coordinator, Tech Prep Bureau of Voc. Education Education Building State 23 Augusta ME 04333 (207) 287-1070 Fax: (207) 287-1037

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
MD	947,000	P(16)-51,800	1,180,000	I(16)-70,000	NA	NA	Dept. of Education, Division of Career and Technology Education	Ms. Judy Loar Specialist for Tech Prep Progs. Maryland Department of Educatio 200 W. Baltimore Street Baltimore MD 21201 (301) 333-2044 Fax: (301) 333-2099
MA	1,162,000	P(11)-100,000	1,700,000	I(11)-145,000	NA	NA	Department of Education, Division of Occupational Education, Bureau of Postsecondary Occupational-Technical Education	Ms. Pam Barry Director of Tech Prep Occupational Education 1385 Hancock Street Quincy MA 02169 (617) 770-7388 Fax: (617) 770-7605
MI	2,400,000	P(42)-15,000 Formula	5,090,000	I(42)-120,000	NA	NA	Dept. of Education, Community College Unit, Higher Education Management Services	Ms. Barbara Argumedow Higher Education Consultant Michigan Dept. of Education P.O. Box 30008 Lansing MI 48909 (517) 335-3067 Fax: (517) 373-2759
MN	1,050,176	P(10)-5,000 I(7)-80,000	1,290,000	P(2)-80,000 I(15)-80,000	35,000	P(7)-5,000	State Board of Technical Colleges	Ms. Jeanette Daines State Director of Tech. Colleges Minnesota Board of Voc. Tech. Ed 1st Fl., Capitol Sq. Bldg, 550 St. Paul MN 55101 (612) 296-9451 Fax: (612) 296-3348

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
MS	858,000	P(6)-100,000	360,000	P(3)-60,000 I(3)-60,000	735,000	P(8)-92,000	Dept. of Education	Mr. Joe McDaniel Dir. of Bureau of Business Mississippi Dept. of Education P.O. Box 771 Jackson MS 39205 (601) 359-3951 Fax: (601) 359-2326
MO	1,349,000	P(6)-50,000 I(1)-250,000 (each yr./3 years)	1,000,000	P(2)-100,000 I(4)-200,000	500,000	P(5)-100,000	State Dept. of Elementary and Secondary Education	Dr. Robison Coordinator of Tech Prep Dept of Elementary & Sec. Ed. P.O. Box 480 Jefferson City MO 65102 (314) 751-3500 Fax: (314) 751-1179
MT	232,615	P(4)-51,000	600,000	I(4)-150,000	NA	NA	Board of Regents of Higher Education	Ms. Brady Vardmann Director of Fed. Voc. Programs Montana University System 2500 Broadway Helena MT 59620-2602 (406) 444-6570 Fax: (406) 444-0684
NE	440,000	P(6)-73,000 formula	578,000	I(6)-96,000	NA	NA	State Dept. of Education	Mr. Dick Campbell Director of Tech Prep Nebraska Department of Education 301 Cent. Mall S, 6th Floor Lincoln NE 68509 (402) 471-4808 Fax: (402) 471-0117

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
NV	236,082	P(3)-78,694	378,000	I(3)-126,000	NA	NA	Occupational and Continuing Education Division	Mr. John Jeans Ed. Consultant, Occup. Education Nevada Department of Education 400 W. King Street Carson City NV 89710 (702) 687-3144 Fax: (702) 687-5660
NH	236,000	P(2)-30,000 I(2)-77,500	245,000	I(4)-60,000	NA	NA	State Dept. of Education, Bureau of Vocational and Technical Education	Mr. Norm Tilton Curriculum Supervisor New Hampshire Dept. of Educatio 101 Pleasant Street Concord NH 03301 (603) 271-2452 Fax: (603) 271-1953
NJ	1,500,000	P(32)-50,000	1,425,000	I(15)-95,000	350,000	P(8)-44,000	State Dept. of Education	Ms. Elaine Turk Ed. Program Specialist New Jersey Dept. of Education 225 W. State Street Trenton NJ 08625 (609) 292-6340 Fax: (609) 633-0658
NM	466,000	P(9)-55,000	520,000	I(10)-52,000	60,000	P(3)-20,000	Dept. of Education	Ms. Betty Campbell Director of Tech Prep New Mexico Dept. of Education 300 Don Gaspar Santa Fe NM 87503 (505) 827-6511 Fax: (505) 827-6696

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
NY	3,358,360	P(6)-50,000 D(8)-250,000	3,500,000	I(14)-250,000	910,000	P(14)-65,000	Dept. of Education	Mr. Michael King Director of Tech Prep New York Dept. of Education One Commerce Plaza, Room 1624 Albany NY 12234 (518) 474-5705 Fax: (518) 486-5221
NC	1,400,000	P(20)-25,000 I(18)-50,000	700,000	I(14)-50,000	1,300,000	P(10)-25,000 I(21)-50,000	Dept. of Education	Mr. Ken Smith Chief Consultant NC Dept. of Public Instruction 116 W. Edenton St., Room 54 Raleigh NC 27603-1712 (919) 733-7046 Fax: (919) 733-0648
ND	193,000	P(1)- statewide grant with multiple participants (Formula)	311,000	I(1)-311,000	NA	NA	Bismarck State College (Contracted by State Board for Vocational Education)	Ms. Anita Decker Tech Prep Director Bismark State College 1500 Edwards Avenue Bismark ND 58501 (701) 224-5522 Fax: (701) 224-5552
OH	2,937,072	D(6)-150,000	900,000	D(6)-150,000	2,100,000	P(7)-300,000	Dept. of Education, Division of Career and Vocational Education	Mr. Jack Lenz Supt., Tech Prep and Articulation Ohio Department of Education 65 S. Front St., Room 909 Columbus OH 43266-0303 (614) 466-5910 Fax: (614) 644-5702

---

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
OK	1,000,000	P(6)-150,000	900,000	I(6)-150,000	540,000	P(2)-135,000 I(2)-135,000	Oklahoma Dept. of Vocational Technical Education	Ms. Linda Thompson Coordinator of Inst. Services Oklahoma Dept. of Education 1500 W. Seventh Avenue Stillwater OK 74074 (405) 743-5114 Fax: (405) 743-5142
OR	734,474	P(18)-40,800 Formula	1,000,000	I(18)-55,000	NA	NA	Oregon Dept. of Education, Offices of Community College Services and Professional-Technical Education	Mr. Greg Harpole Business Office Specialist Oregon Department of Education 700 Pringle Parkway, SE Salem OR 97310-0290 (503) 378-2337 Fax: (503) 378-5156
PA	2,900,000	P(14)-200,000	2,900,000	I(14)-200,000	1,100,000	P(7)-160,000	Dept. of Education, Bureau of Vocational and Technical Education	Mr. Michael Snyder Dir. of Customized Job Training Pennsylvania Dept. of Education 333 Market St. Harrisburg PA 17126-0333 (717) 787-5293 Fax: (717) 783-6672
RI	239,000	P(1)- statewide grant with multiple participants (Formula)	354,000	I(1)- statewide grant with multiple participants (Formula)	NA	NA	Dept. of Elementary and Secondary Education, Division of Vocational and Adult Education	Mr. Bob Forest Director of Tech Prep Vocational Education Wms Bldg, #222B, 22 Hayes Providence RI 02908 (401) 277-2691 Fax: (401) 277-6178

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
SC	2,200,000	P(6)-50,000 D(10)-150,000	2,800,000	I(16)-175,000	NA	NA	Dept. of Education, Office of Occupational Education	Ms. Barbara James Tech Prep Coordinator S.C. Department of Education 904 Rutledge Office Building Columbia SC 29201 (803) 734-8411 Fax: (803) 734-8624
SD	208,000	P(4)-45,000	180,000	P(4)-45,000	NA	NA	State Office of Adult, Vocational, and Technical Education	Ms. Mickey Wienk Tech Prep Director Division of Voc. Tech. Ed. Kneip Bldg, 700 Govs. Drive Pierre SD 57501-2293 (605) 886-5872 Fax: (605) 886-2824
TN	1,400,000	P(14)-85,000	1,300,000	P(13)-90,000 I(1)-90,000	NA	NA	Board of Education and Board of Regents	Mr. Jim Vinson Director of Program Planning Tennessee Board of Education 200 Cordell Hull Building Nashville TN 37219 (615) 741-1716 Fax: (615) 741-6236

---

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
TX	4,860,000	P(20)-50,000 I(25)-150,000-300,000	4,000,000	I(18)-200,000	1,225,000	P(7)-175,000	Joint: - Texas Higher Education Coordinating Board - Texas Education Agency - Texas Dept. of Commerce	Ms. Carrie Nelson Director of Tech Prep Texas Higher Ed. Coord. Bd. P.O. Box 12788 Austin TX 78711 (512) 483-6250 Fax: (512) 483-6444
UT	560,000	P(11)-50,000 to 250,000, rural to urban	560,000	P(11)-50,000	NA	NA	Joint: - State Board for Vocational Education - Board of Regents	Mr. Ron Gonzales Dir. of Tech Prep Utah State Office of Education 250 E. 500 South Salt Lake City UT 84111 (801) 538-7843 Fax: (801) 538-7868
VT	158,000	P(10)-15,000	125,000	I(5)-25,000	45,000	P(3)-15,000	Dept. of Education	Mr. Allen Evans Adult Education Coordinator Vermont Dept. of Education State Office Building Montpelier VT 05602 (802) 828-3101 Fax: (802) 828-3140

---

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
VA	1,450,000	P(19)-15,000 I(6)-100,000 E(2)-150,000 C(6)-50,000	840,000	P(6)-25,000 I(13)-30,000 D(2)-150,000	920,000	P(23)-40,000	Virginia Community College System	Mr. Ned Swartz State Coordinator, Tech Prep Virg. Community College System 101 N. 14th St. Richmond VA 23219 (804) 321-2877 Fax: (804) 786-3787
WA	1,149,000	P(5)-15,000 I(5)-52,000 - 200,000	590,000	P(6)-15,000 I(5)-100,000	810,000	P(4)-15,000 I(5)-150,000	Joint: - Workforce Training and Education Coordinating Board - State Board for Community and Technical Colleges	Mr. Rob Fieldman Program Specialist State Board for Vocational Ed Bldg #17, Airdustrial Pk Box 43105 Olympia WA 98504-6110 (206) 753-5662 Fax: (206) 586-5862
WV	582,000	P(7)-83,000	615,000	I(7)-88,000	100,000	P(4)-25,000	Joint: - Dept. of Education - Joint Commission for Vocational, Technical and Occupational Education - State College System	Dr. Stanley Hopkins Director of Institutional Services West Virginia Dept. of Education 1900 Kansas Blvd E, Building 6, Room 243 Charleston WV 25305 (304) 558-3075 Fax: (304) 558-0048

---

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Title III Federal Funds Awarded by States for Fiscal Years 1992 and 1993

St.	Federal $ FY '92	Type[a] Number[b], Avg.$ FY '92	Awarded $, Continuing, FY '93[c]	Continuing Type, Number, Avg.$, FY '93	Awarded $, New FY '93[d]	New Type, Number, Avg.$, FY '93	Administering Agency	State Contact Person
WI	1,287,000	P(16)-65,000 Formula	1,210,000	I(16)-75,000	NA	NA	Dept. of Public Instruction	Mr. Glenn Davison Assistant State Director State Board of VTAE 310 Price Pl., P.O. Box 7874 Madison WI 53707 (608) 266-2449 Fax: (608) 266-1285
WY	139,000	P(4)-34,500	60,000	P(2)-30,000	55,000	I(2)-20,000	State Dept. of Education, Applied Technology and Vocational Education Division	Ms. Ellen Mellott Acting Dir. of Voc. Education Wyoming Dept. of Education 6106 N. Yellowstone Rd. Cheyenne WY 82009 (307) 777-7415 Fax: (307) 777-6234

---

[a] P = Planning; D = Demonstration; C = Continuing; I = Implementation; E = Exemplary.

[b] States determine number of grants on a competitive basis unless otherwise noted.

[c] Dollars awarded to projects continuing from FY 1992 into FY 1993.

[d] Dollars awarded to projects first receiving funding in FY 1993.

Appendix B: Acknowledgements of Sites for NCRVE Research on Tech Prep

---

Illinois sites

Illinois State Board of Education
Department of Adult, Vocational and Technical Education
100 N. First Street
Springfield, IL 62777
(217) 782-4627
Contact: Mr. Jerry Ohare

Lake Land College and Eastern Illinois Education for Employment System Consortium
Lake Land College
5501 Lake Land Boulevard
Mattoon, IL 61938
(217) 235-3131
Contact: Mr. James Brackney

Rock Valley College and Career Education Association of North Central Illinois Consortium
Rock Valley College
5279 - 28th Avenue
Rockford, IL 61109
(815) 397-4275
Contact: Mr. Gary Schott

North Carolina sites

North Carolina Department of Public Instruction
Division of Vocational Education Services
116 W. Edenton Street
Raleigh, NC 27603
(919) 733-7046
Contact: Mr. Ken Smith

Catawba County Schools and Catawba Valley Community College Consortium
Catawba County Schools
P.O. Box 1000
Newton, NC 28658
(704) 464-8333
Contact: Ms. Roxy Poovey

Continued on next page

Appendix B, continued

North Carolina sites
(continued)

Cumberland County Schools and Fayetteville Technical Community College Consortium
Cumberland County Schools
P.O. Box 2357
Fayetteville, NC 28302
(919) 678-2410
Contact: Ms. Peggy Hall

Oregon sites

Oregon Board of Education
Office of Community College Services
700 Pringle Parkway Street, S.E.
Salem, OR 97310
(503) 378-3590
Contact: Mr. Greg Harpole

Region 3 - Chemeketa Community College and Marion Polk Yamhill Counties - Consortium
Chemeketa Community College
P.O. Box 14007
Salem, OR 97309
(503) 399-5239
Contact: Ms. Ellen Levine

Region 4 - Clackamas Educational Services District and Clackamas Community College - Consortium
P.O. Box 216
Marylhurst, OR 97036
(503) 635-0564
Contact: Mr. John Quiggle

Continued on next page

Appendix B, continued

Texas sites	Texas Higher Education Coordinating Board P.O. Box 12788 Austin, TX 78711 (512) 483-6250 Contact: Ms. Carrie Nelson
	Golden Crescent Consortium Victoria College 2200 E. Red River Victoria, TX 77901 (512) 573-3291 Contact: Ms. Melonie Wade
	Upper Rio Grande Tech Prep Consortium El Paso Community College P.O. Box 20500 El Paso, TX 79998 (915) 594-2000 Contact: Ms. Pat Flanagan

---

Appendix C: Action steps for Successful Articulation

Quote

> Finally, perhaps a key tension for some open-door community colleges is that they have side-stepped the need to work closely with high schools and to state clearly their own preparation expectations for high school students. If they are to have the best chance for success in a community college, high school students must have a clear sense of what it will take to succeed. Yet, most young people hold only vague notions of what adequate preparation for a community, technical, or junior college experience means. In the great haste to separate themselves from high schools, too many community colleges have weakened or nearly severed the high school-community college connection.
>
> Dale Parnell, *The Neglected Majority*

1. Take the initiative

The question, "who's on first?" doesn't seem to matter, according to Washington educators who have been successful in sealing articulation agreements. Sometimes the lead is taken by the community college; in other cases it has been the secondary schools who took the first step in exploring possible joint efforts. Either way, someone has to think about these questions:

- What institutions will benefit from these discussions?
- Who are the key players in each system?

2. Schedule a planning meeting

The agenda for subsequent planning meetings can be relatively simple, but should include

- identifying other organizations who might benefit.
- establishing broad goals.
- developing a timeline and listing tasks.
- setting annual goals, requiring at least a two-hour meeting.

Continued on next page

3. Secure validation of chief executive officers

Successful articulation ultimately requires the policy-level approval of the chief executives at each institution and the endorsement of each board of directors. A policy statement inserted into the formal decision-making process for each agency will give credence to all remaining steps.

Even institutions that have taken the more informal approach to articulation may eventually choose to have a set of written policies to guide staff who follow them in the future.

4. Develop coordinating mechanism

A planning team comprised of interested staff from each partner institution then begins the slow but sure process of building new alliances as follows:

- Some have chosen to identify one person to serve as coordinator; others have used a third-party facilitator to gather information and bring key parties together. Someone will need to be responsible for developing an annual work plan that specifies who does what with whom and when.
- This is the group that needs to identify likely program areas that will be tackled first.
- The team must also come up with a format for a prototype agreement that might fit the local situation.
- This work group also clears the way for faculty to spend released time reviewing each other's programs and building a common understanding of desired competencies students should encounter.
- The "articulation council" must also establish mechanisms for maintaining consistent communication.
- Finally, this steering committee needs to document all meetings and decisions to maintain a formal record of progress.

Continued on next page

5. Orient staff members of participating organizations

It will be up to the middle managers in each institution to orient their staff to the possibilities of articulation:

- Emphasize the policy-level commitment of the chief executives and the respective boards.
- Describe the process and the proposed products.
- Provide adequate and detailed instructions and models to follow.
- Identify a facilitator for discipline meetings.
- Clarify how instructor initiative enhances the possibility of success.

6. Arrange interagency work sessions

Cooperating instructors will need to work out details of curriculum offerings, course sequences, competency lists, and standards of performance. This comes through opportunities to visit each other's campuses, review goals and objectives, and discuss instructional strategies and resources.

The dialogue between the secondary and postsecondary programs can be initiated by either partner.

Items that might be covered include

- What is the history of advanced placement at the college?
- Have students from the school district been placed previously?
- What are the expectations of the high school staff?
- What are the expectations of the college staff?
- What is the current process for a student to be placed into a class through waivers of prerequisites or for that student to receive credit for skill/competency attainment?
- Describe the curriculum of the current high school program: topics covered, daily allotment of time to lab and to theory, texts used, method of determining proficiency (e.g., skills list or grades). Note: The college instructor may need time to review the curriculum and report back at a subsequent meeting.
- Define the steps to be taken for a student (in the vocational area under discussion) to receive advanced placement.
- Establish timeline for completion of the agreement.
- Set subsequent meeting if indicated.

Continued on next page

Appendix C, continued

6. Arrange interagency work sessions (continued)	Note: It will be helpful if one person assumes the role of keeping minutes of the meetings and then distributes the minutes to participants within three days. A record is then available for reference should questions arise. Future dialogue can be facilitated where such documentation is available. • Staff then need to list the matches and mismatches that may emerge as secondary/postsecondary curricula are compared. • If a system of validating or certifying competence is to be used, then all must understand how it will work.
7. Complete draft agreements	The steering committee needs to decide if the draft agreements will need to be presented to each board for approval or if administrative approval will be sufficient.
8. Publicize the articulation agreements	Participating institutions will need to make public their articulation agreements. • A public signing ceremony has been popular in several communities, complete with press coverage and souvenir pens. • At a minimum, district newsletters going to staff and parents should highlight the new opportunities students will enjoy as a result of the articulation process. • Sitting down with building principals and counselors seems to be one effective activity to ensure success.
9. Implement the process	As participants work to implement articulation of programs, gathering and sharing information remain important. • Each secondary teacher must become an enthusiastic advocate for the process that has emerged. • Particular attention should be given to sharing the new program options at the middle and junior high school levels as students begin to forecast their four-year plans. • Data on the students who begin to take advantage of the system need to be accumulated for program refinement and reporting.
10. Review process annually	A determination needs to be made about what will happen when a key staff member—particularly a teacher—leaves one of the partner institutions and a new person comes in with no understanding of the articulation arrangements.